Š

BAKER & MCKENZIE

RECEIVED CENTRAL FAX CENTER

OCT 1 4 2004

**Facsimile Transmission** 

Baker & McKenzie LLP 805 Third Avenue New York, NY 10022, USA

Tel: +1 212 751 5700 Fax: +1 212 759 9133 www.bakemet.com

Date

October 14, 2004

**Phone** 

Fax

To

Examiner Alan D. Diamond, Group Art Unit 1753, Mail Stop Amendment,

703-872-9306

USPTO

From

Frank M. Gasparo

+1 212 891 3942

+1 212 310 1642

Client/Matter No.

Re

Application no. 09/682,363

Pages (w/cover)

64

Please see the attached.

#### **Privacy And Confidentiality Notice**

The information contained in this facsimile is intended for the named recipients only. It may contain privileged and confidential information and if you are not an intended recipient, you must not copy, distribute or take any action in reliance on it. If you have received this facsimile in error, please notify us immediately by a collect telephone call to Office Services at +1 212 751 5700 x 4048 and return the original to the sender by mail. We will reimburse you for the postage.

Baker & McKenzie LLP is a member of Baker & McKenzie International, a Swiss Verein.

Under the Paperwork Reduction Act of 199	U.S. F	Approved for use through 07/31/2008. OMB 0851-003 Patent and Trademark Office; U.S. DEPARTMENT OF COMMERC laction of information unless it displays a valid OMB control numbe
	Application Number	09/682,363
TRANSMITTAL	Filing Date	B/24/2001
FORM	First Named Inventor	Anthony C. Zuppero
	Art Unit	1753
(to be used for all correspondence after initia		Alan D. Diamond
Total Number of Pages in This Submission	Attorney Docket Number	22122878-6
	ENCLOSURES (Check all	that apply)
Fee Transmittal Form	Drawing(s)	After Allowance Communication to TC  Appeal Communication to Board
Fee Attached	Licensing-related Papers	of Appeals and Interferences
Amendment/Reply  After Final  Affidavits/declaration(s)  Extension of Time Request  Express Abandonment Request  Information Disclosure Statement  Certified Copy of Priority Document(s)  Repl / to Missing Parts/ Incomplete Application  Reply to Missing Parts under 37 CFR 1.52 or 1.53	Petition Petition to Convert to a Provisional Application Power of Attorney, Revocation Change of Correspondence Ac Terminal Disclaimer Request for Refund CD, Number of CD(s) Landscape Table on CD Remarks This correspondence is being facsimile 14, 2004.	Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)  Proprietary Information  Status Letter Other Enclosure(s) (please Identify below): PTO/SB/08A and B forms.  transmitted to the USPTO at 703-872-9306 on October
	URE OF APPLICANT, ATTOR	NEY, OR AGENT
Firm Name  Baker & MeKenzie	1	
Signature 2-m./		
Printed name Frank M. Gasparo, Esq.		
Date October 14, 2004	Reg	g. No. 44,700
CE	RTIFICATE OF TRANSMISSIO	N/MAILING
the date shown below:	ng facsimile transmitted to the USPTO $\sigma$ lope addressed to: Commissioner for $P_{\sigma}$	or deposited with the United States Postal Service with atents, P.O. Box 1450, Alexandria, VA 22313-1450 on
Signature Amelia Finker		
Typed or printed name And	in Julies	Date October 14, 2004

This collection o' information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, prepring, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief information Officer, U.S. Patent and Trademerk Offics. U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

22122878-6

### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

RECEIVED **CENTRAL FAX CENTER** 

In re Application of: Anthony C. Zuppero et al.

Art Unit:

1753

OCT 1 4 2004

Serial No.:

09/682,363

Examiner:

Diamond, Alan D.

Filing Date:

August 24, 2001

Date:

October 14, 2004

TITLE:

PULSED ELECTRON JUMP GENERATOR

Mail Stop Amendment Commissioner for Patents P.C. Box 1450 Alexandria, VA 22313-1450

#### INFORMATION DISCLOSURE STATEMENT

#### SIR:

- 1. In accordance with the duty of disclosure under 37 C.F.R. § 1.56 and in conformance with the procedures of 37 C.F.R. § § 1.97 and 1.98 and M.P.E.P. § 609, attorneys for Applicants hereby bring the following references, which are listed on the attached modified PTO Form 1449 to the attention of the Examiner. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.
- 2. Applicants respectfully request that the following co-owned patents and co-pending applications be considered and made of record in the present application:

#### CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, Group Art Unit 1753 at (703) 872-9306 on October 14, 2004.

NYCL:MS/430373.1

US Patent Nos. 6,114,620 (cited on PTO-892 by the Examiner); 6,218,608 (cited on PTO-892 by the Examiner); 6,222,116 (cited on PTO-892 by the Examiner); 6,268,560 (cited on PTO-892 by the Examiner); 6,327,859 (cited on PTO-892 by the Examiner); 6,700,056 (cited on PTO-892 by the Examiner); 6,678,305; 6,649,823 (cited on PTO-892 by the Examiner); and

US Patent Application Nos. 10/759,341; 09/631,463; 10/052,004 (US-2003/0166307, cited on PTO-892 by the Examiner); 10/625,801; 10/185,086 (US-2003/0000570, cited on PTO-892 by the Examiner).

The references cited in each of those patents and applications are listed on

 Copies of the references listed on the modified PTO form 1449 will follow under a separate cover by first class mail due to their volume.

Form 1449 accompanying this information disclosure statement.

4. No fee is deemed necessary with the filing of these documents. If a fee is deemed necessary, we authorize the Commissioner of Patents and Trademarks to charge Deposit Account No.: 02-0393.

Respectfully submitted,

Frank M. Gasparo
Registration No. 44,700
BAKER & McKENZIE
805 Third Avenue
New York, NY 10022

(212) 751-5700 telephone (212) 759-9133 facsimile

Attachments

()

PTO/SB/08A (08-03) Approved for use through 07/31/2008, OMB 0851-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

22122878-6

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of Information unless it contains a valid OMB control number. Complete if Known Substitute for form 1449/PTO **Application Number** 09/682,363 Filing Date **INFORMATION DISCLOSURE** 8/24/2001 First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT Art Unit 1753 (Uso as many sheets as necessary) **Examiner Name** Alan D. Diamond

Attorney Docket Number

Examiner	Cite	Document Number	Publication Date	T DOCUMENTS  Name of Patentee or	
initials"	No.1		MM-DD-YYYY	Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevan
	<u> </u>	Number-Kind Code <sup>2 (F known)</sup>			Figures Appear
	11	<sup>US-</sup> 6114620A	09-2000	Zuppero et al.	
	2	<sup>US-</sup> 4753579	06-1988	Murphy	
	3	<sup>US-</sup> 5525041	06-1996	Deak	
	4	<sup>US-</sup> 5299422	04-1994	Nakagawa et al.	
	5	<sup>US-</sup> 5317876	05-1994	Nakagawa et al.	
				3	
	i		7		
	8	us- 5593509	01-1997	Zuppero et al.	
	9	<sup>US-</sup> 5641585	06-1997	Lessing et al.	<del>  '</del>
			1		<del></del> -
			<del></del> -		
J					<del> </del>
	, 			· · · · · · · · · · · · · · · · · · ·	
		. :			
	1				
	_			-	<del>                                     </del>
				FF W W	<del> </del>
	19	US- 20020017827 A1	02-2002	Zuppero et al.	<del></del>

Examiner	Cite	FORE	<b>GN PATENT DOCU</b>	MENTS		
initials*	No.	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages	Π
		Country Code Number 4 Hand Code (If known)	MM-DD-YYYY		Or Relevant Figures Appear	ゼ
		1				┢
				· · · · · · · · · · · · · · · · · · ·		
Examiner						

Signature Considered \*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. \*Applicant's unique citation designation number (optional). \*See Kinds Codes of USPTO Patent Documents at <a href="https://www.usplo.gov">www.usplo.gov</a> or MPEP 901.04. \*Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). \*For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. \*Rind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. \*Applicant is to place a check mark here if English language This collection of information is required by the cubic of the patent by the cubic is to file (and by the cubic of the patent by the cubic is to file (and by the cubic of the patent of the

Date

Translation is atta-hed.
This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND

If you need assistence in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Substitute for form 1449/PTO

'n

Sheet

PTO/S8/08A (08-03)
Approved for use through 07/31/2008, OMB 0651-0031
U.S. Patent and Trademerk Office; U.S. DEPARTMENT OF COMMERCE

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known				
Application Number	09/682,363			
Filing Date	8/24/2001			
First Named Inventor	Anthony C. Zuppero			
Art Unit	1753			
Examiner Name	Alan D. Diamond			
Attorney Docket Number	22122878-6			

Examiner Initials*	Cite No.1	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or	Pages, Columns, Lines, Where
		Number-Kind Code <sup>2 (7 Innoven)</sup>		Applicant of Cited Document	Relevant Passages or Relevan Figures Appear
			<del></del>	·	
		<del></del>	<del></del>		
		· <del></del>	<del> </del>		
	<u> </u>	110	<del>_</del>		
	25	<sup>US-</sup> 20020070632	06-2002	Zuppero et al.	
	26	<sup>US-</sup> 4651324	03-1987	Prein et al.	
	27	<sup>US-</sup> 5337329	08-1994	Foster, Jack	
	28	<sup>US-</sup> 4756000	07-1988	Macken, John A.	<del></del>
	29	<sup>US-</sup> 5999547	12-1999	Schneider et al.	
	30	<sup>US-</sup> 5048042	09-1991	Moser et al.	
	31	<sup>US-</sup> 6268560	07-2001	Zueppero et al.	
	32	<sup>US-</sup> 5587827	12-1996	Hakimi et al.	
	33	<sup>US-</sup> 6114620	09-2000	Zuppero et al.	
	34	US- 4012301	03-1977	Rich et al.	
	35	us- 5470395	11-1995	Yater et al.	
	36	Us-			
		US-			1
	$\neg \neg$	US-	<u> </u>		
		US-			<u> </u>

FOREIGN PATENT DOCUMENTS								
Examiner Cite Initials* No.1		Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages			
		Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)	MM-DD-YYYY	7 phone of One of Document	Or Relevant Figures Appear	Τ°		
						┝		
						-		

Examiner		Date		
		Date		
Signature		Considered	1	
		Cousineten	1	
	<del></del>	1	1	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. Applicant's unique citation designation number (optional). See Kinds Codes of USPTO Patent Documents at <a href="https://www.uspto.gov">www.uspto.gov</a> or MPEP 901.04. Enter Office that Issued the document, by the two-letter code (WIPO Standard ST.3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the sarial number of the patent document. Action of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. Applicant is to place a check mark here if English language Translation is attached.

Translation is attached.
This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, cell 1-800-PTO-9199 (1-800-786-9199) and select option 2.

'n

PTO/SB/08A (08-03)

Approved for use through 07/31/2006.	OMB 0651-003
U.S. Patent and Trademark Office; U.S. DEPARTMENT	OF COMMERC
The second second in the second secon	

	Complete if Known			
Substitute for form 1449/PTO	Application Number	09/682,363		
WITH THE PLANT BLOOK OCUBE	Filing Date	8/24/2001		
INFORMATION DISCLOSURE	First Named Inventor	Anthony C. Zuppero		
STATEMENT BY APPLICANT	Art Unit	1753	-	
(Use as many sheets as necessary)	Examiner Name	Alan D. Diamond		
_ <del></del>	Attorney Docket Number	22122878-6		

Sheet		0	Ц	Attorne	y DOCKET Number   ZZ 1Z.	2010-0
				U.S. PATENT DOCL	MENTS	
Examine:	Cite No.1	Nilmshor ''	nd Code <sup>2</sup> (known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Pagsages or Relevant Figures Appelle
	1	5,651,838		Fraas et al.	07-29-1997	
	2	5,932,885		DeBellis et al.	08-03-1999	
					<del> </del>	
			+-1		<del> </del>	
			+			
<u> </u>	<u> </u>		-			
						·
<u> </u>			+			
			-			
-			$\Box$			
		<u></u>	-		<del> </del>	

	FOREIGN PATENT DOCUMENTS								
Exeminer	Cite	F	oreign Patent Do	cument	Name of Patentee or	Date of Publication of	Pages, Columns, Lines.	T	
initi ats	No.1	Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>s</sup> (# known)	Applicant of Cited Document	Cited Document MM-DD-YYYY	Where Roll vant Passages or Relevant Floures Appear	₹6	
						<u> </u>		L	
		ļ <u> </u>						L	
		<del>  </del>					····	↓_	
		<del>  </del>				<del>  -</del>	<del></del>	-	
		<del>                                     </del>	<del></del>	<del></del>				╫	
						<del> </del>	<del></del>	1-	
					······································	1		╁┈	
								╅┈	

Examiner	Date	
Signature	Considered	

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precade the setter number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.



Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the timount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS, SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

			i		Shee	t of
	IATION DISCLO		Attorney Docket Number 22122878-6		Application Numbe	
(Use se	veral sheets if neces	sary)				
		<b>V</b> .	Applicants Anthony C. Zuppero	et al.		<u> </u>
,			Filing Date 8/24/2001		Group Art Unit 1753	
			U.S. PATENT DOCU	MENTS		
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE
<del></del>			<u>'</u>			
	<del>                                     </del>					
		<del></del>				
	Ľ.		•	1		

#### FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSI.AT	
	HOMBER	<del></del>				YES	NO
			<del></del>		_		
<b></b>				_1		_L	
-		1				<del> </del>	
					<del></del>	<del> </del> - -	
<del></del>		<del></del>					

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)

	(interest and interest and inte
	"Electron-hole pair creation by reactions at metal surfaces", downloaded from www.aps.org/meet/CENT99/BAPS/abs?S6980001.html
	American Physical Society Centennial Meeting Program, Atlanta, GA. 20-26 March 1999
	"Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium", Physical Review Letters, Volume 82, Number 2. 11 January 1999
EXAMINER:	DATE CONSIDERED:
EXAMINER: 1	Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in

conformatice and not considered. Include copy of this form with next communication to the applicant.

Computer-Generated Form PTO-1449 (Rev 2-92)

[NYC] 341763.1

..Sheet

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known Application Number 09/682,363 Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 **Examiner Name** Alan D. Diamond Attorney Docket Number | 22122878-6

<del></del>			U.S. PATE	NT DOCUMENTS	
Examiner Initials		Document Namber  Number- Kind Code <sup>2</sup> (if known	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant
	7	us. 4,634,641 ·	01-06-1987	Nozik	Figures Appear
	2	US. 5,488,231	01-30-1996	Kwon et al.	
	3	US- 5,757,833	05-26-1998	Arakawa et al.	
	4	US- 5,917,195	06-29-1999	Brown	
	5	us. 6,067,309	05-23-2000	Onomura et al.	
	6	us- 6,114,620	09-05-2000	Zuppero et al.	· · · · · · · · · · · · · · · · · · ·
	7	US- 6,218,608	04-17-2001	Zuppero et al.	<u> </u>
	8	us- 6,222,116	04-24-2001	Zuppero et al.	·····
		US-			
1		US-			
		US-	h		

		FORE	IGN PATENT D	OCUMENTS		$\blacksquare$
Examiner Initials	Cite No.1	Foreign Patent Document  County Code 2 - Number 4 - Kind Code 5 (Kinown)	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	76
	<u> </u>					
	-					
			·			
	<del> </del>		<del></del>			
		•				

	<del></del>		
Examiner	Data	I .	
	Date	I .	
Signature	Considered	1	
	001131401	1	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at <a href="https://www.uspto.gov">www.uspto.gov</a> or MPEP 901.64. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. Applicant is to place a check mark here if English language Translation is attached.

Surden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Steet

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Inder the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Coi	mplete if Known	`
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

		·	U.S, PAT	ENT DOCUMENTS	
Examiner ir idals		_Document Number Number - Kind Code <sup>2</sup> (if known	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	us-6084173	07/04/2000	DiMatteo	
	L	US-			
		US-			
		us-			
	Γ	US-			
		US-			
		US-			
		บร-			
	[	US-			
		บร-			
		US-	- 100 -		
	,	US-			
		US-			
		US-	· · · · · · · · · · · · · · · · · · ·		
		US+			
		US-			
		us-			
***********		US-		***************************************	
		US-	d		
		us-		**************************************	·

		FOR	EIGN PATENT D	OCUMENTS		
Examiner Ir itlais	Cite No.1	Foreign Patent Document  Opunity Code 3 - Number 4 - Kind Code 3 (# Immun)	Publication Date	Name of Palentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	т
		afficiences constitute and the second				
		e i Mataupin i gen Marietina dele i Marie i genera e u y Mataupiniste, ante interpretagning i ingresio	al to the desired the state of property and the state of property and the state of		981 1981 1981 1981 1981 1981 1981 1981	
		Anna a ta a sa a sa s				
		mathal Made a demonstration of the contract of			THE A CHARLES AND ADDRESS OF THE PARTY OF TH	-
		the process of the control of the co		e en recedenta en la francisco de como esta como esta en entre en el como en en en el como en en entre en entre La como en en entre en entre en entre en entre en entre en entre en en entre entre en entre ent	رون برون برای به خواه برون به دید در ۱۳۵۰ به مداده به م مداده به مداده به مد	
		i i manti pati miliosomi isomotaumi manumi miran primprati interiori i relata i i ita a isa padatan su		parties of agreement symmetric control and at the definition by the second state of th		<b> </b>
		eristra eristratu yenine i izma eristratu eristratu eristratu eristratu eristratu eristratu eristratu eristratu				<b>}</b>

	وري ويسمون والمنظول والمراب المراب والمراب والمراب والمراب والمراب والمراب والمراب والمراب والمراب والمراب والم		
Examiner		Date	
Signature		Considered	

B inden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at <a href="https://www.uspto.gov">www.uspto.gov</a> or MPEP 931.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the sarial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 5 Applicant is to place a check mark here if English language Translation is attached.

Approved for use through 07/31/2006, OMB 0851-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Coi	mplete if Known	1
Application Number	09/682,363	_
Filing Date	8/24/2001	_
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

	<del></del>		_
		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	
Examiner	Cite	Include name of the author (in CAPITAL LETTERS), little of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where nublished.	Ī
-	2	HARRISON, P. et al., The Carrier Dynamics of Far-Infrared Intersubband Lasers and Tunable Emitters, Institute of Microwaves and Photonics, University	
	3	WEBER, et al., to X2 Electron Transfer Times in Type-II GaAs/A1As Superflattices Due to Emission of Confined and Interface Phonons, Superlattices and Microstructures, Vol. 23, No. 2 (1998).	
<u>, , , , , , , , , , , , , , , , , , , </u>	4	FANN, W.S. et al., Electron Thermalization in Gold, Physical Review B, Brief Reports, Vol. 46, No. 20, (1992)	
ann a - (erren	5	Ultrafast Surface Dynamics Group, Time-Resolved Two-Photon Photoemission (TR-2PPE), http://www.llp.physik.uni-essen.de/aeschlimann/2y_photo.htm	
ggger and de religio	6	LEWIS et al., Vibrational Dynamics of Molecular Overlayers on Metal Surfaces, Dept. of Chemistry, University of Pennysivania, http://lorax.chem.upenn.edu/molsurf/cucotalk/html.	
	7	RETTNER et al., Dynamics of the Chemisorption of 02 on Pt(111): Dissociation via Direct Population of a Molecularly Chemisorbed Precursor at High Incidence Kinetic Energy, The Journal of Chemical Physics, Vol. 94, Issue 2 (1991)	
	8	FRIEDMAN et al., SiGe/Si THz Laser Based on Transitions Between Inverted Mass Light-Hole and Heavy Hole Standards, Applied Physics Letters, Vol. 78, No. 4 (2001)	
	9	HARRISON et al., Population -Inversion and Gain Estimates for a Semiconductor TASER	
	10	HARRISON et al., Theoretical Studies of Subband Carrier Lifetimes n an Optically Pumped Three-Level Terahertz Laser, Superlattices and Microstructures, Vol. 23, No. 2 (1998)	
	11	HARRISON et al., Room Temperature Population Inversion in SiGe TASER Designs, IMP, School of Electronic and Electrical Engineering, The University of Leeds	
M.J ADDENNIA	12	SUN et al., Pheonon-Pumped Terhertz Gain in n-Type GaAs/AlGaAs Superlattices, Applied Physic Letters, Vol. 7, No.22 (2001)	

Examiner	Date	
Signature	Considered	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burrien Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Approved for use through 07/31/2008. OMB 0651-0031 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of Information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

Sheet

#### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

of

Co	mplete if Known	
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the		
Examiner Initials	Cite No. <sup>1</sup>	Nem (book, magazine, journal, serial, symposium, catalog, etc.), dale, page(s), volume-issue number(s), muhisher, city and/or country where nublished
	13	ALTUKHOV et al., Towards Si1-xGex Quantum-Well Resonant-State Terahertz Laser, Applied Physics Letters, Vol. 79, No. 24 (2001)
	14	SUN et al., Intersubband Lasing Lifetimes of SiGe/Si and GaAs/AlGaAs Multiple Quantum Well Structures, Applied Physics Letters, Vol. 66, No. 25 (1995)
	15	SUN et al., Phonon Pumped SiGe/Si Interminiband Terahertz Laser
	16	SOREF et al., Terhertz Gain in a SIGe/SI Quantum Starcase Utilizing the Heavy-Hole Inverted Effective Mass, Applied Physics Letters, Vol. 79, No. 22 (2001)
	17	AESCHLIMANN et al., Competing Nonradative Channels for Hot Electroni Induced Surface Photochemistry, Chemical Physics 202, 127-141 (1996)
	18	AUERBACH, Daniel J., Hitting the Surface-Softly, Science, Vo. 294, pp. 2488-2489 (2001)
	19	BADESCU et al., Energetics and Vibrational States for Hydrogen on Pt(111), Physical Review Letters, Vol. 88, No. 13 (2002)
.,	20	BALANDIN et al., Effect of Phonon Confinement on the Thermoelectric Figure of Merit of Quantum Wells, Journal of Applied Physics, Vol. 84, No. 11 (1998)
**************************************	21	BARTELS et al., Coherent Zone-Folded Longitudinal Acoustic Phonons in Semiconductor Superlattices: Excitation and Detection, Physical Review Letters, Vol. 82, No. 5 (1999)
	22	BAUMBERG et al., Últrafast Acoustic Phonon Ballistics in Semiconductor Heterostructers, Physical Review Letters, Vol. 78, No. 17 (1997)
11 F 1445 11 Major - major day 1	23	BEDURFTIG et al., Vibrational and Structural Properties of OH Adsorbed on Pt(111), Journal of Chemical Physics, Vol. 111, No. 24 (1999)

_		
Examiner	Date	
Signature	Considered	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not cliation is in conformance with MPEP 609. Draw line through citation if not in conformance and no: considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. OO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet of

	Co	mplete If Known
	Application Number	09/682,363
	Filing Date	8/24/2001
	First Named Inventor	Anthony C. Zuppero
	Art Unit	1753
	Examiner Name	Alan D. Diamond
Ī	Attorney Docket Number	22122070 6

		Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the	7
Examiner Initiate	Cite No. 1	item (book, magazine, journal, serial, symposium, catalog, etc.). date, page(s), volume-tasue number(s), nublisher, city and/or country where nublished.	
the tea commence	24	VALDEN et al., Onset of Catalytic Activity of Gold Clusters on Titania with the Appearance of Nonmetallic Properties, Science, Vol. 281 (1998)	
	25	BONDZIE et al., Oxygen Adsorption on Well-Defined Gold Particles on TiO2(110), J. Vac. Sci. Technol. A17(4) (1999)	
	26	BEZANT et al., Intersubband Relaxation Lefetimes in p-GaAs/AlGaAs Quantum Wells Below theLO-Ohonon Energy Measured in a Free Electron Laser (Experiment, Semicond, Sci. Technol. 14 (1999)	
	27	BRAKO et al., Interaction of CO Molecules Adsorbed on Metal Surfaces, Vacuum 61,89-93 (2001)	
	26	BURGI et al., Confinement of Surface State Electronis in Fabry-Perot Resonators, Physical Review Letters, Vol. 81, No. 24 (1998)	
		BURGI et al., Probling Hot-Electron Dynamics at Surfaces with a Cold Scanning Tunneling Microscope, Physical Review Letters, Vol. 82, No. 22 (1999)	Ī
THE C. S. COLUMN CO. S. S.	30	Longitudinal Optical Phonons in GaAs, Applied Physics Letter, Vol. 80, No. 14 (2002)	İ
	37	CHANG et al., Observation of Coherent Surface Optical Phonon Oscillations by Time-Resolved Surface Second-Harmonic Generation, Physical Review Letters, Vol. 78, No. 24 (1997)	
	32	CHANG et al., Coherent Phonon Spectroscopy of GaAs Surfaces Using Time-Resolved Second-Harmonic Generation, Chemical Physics 251, 283-308 (2000)	1
,	33	CHANG et al. Observation of Local-Interfacial Optical Phonons at Burled Interfaces Using Time-Resolved Second Harmonic Generation, Physical Review B, Vol. 59, No. 19 (1999)	
······································	34	CHEN et al., Stimulate-Emission-Induced Enhancement of the Decay Rate of Longitudinal Optical Phonons in III-V Semiconductors; Applied Physics Letters, Vol. 80, No. 16 (2002)	-

Examiner	Date
Signature	Considered

Burden four Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any commerts on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, V/ashington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449/PTO

Sheet

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Palent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number of the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number of the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number of the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number of the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number of the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number of the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number of the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number of the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid of the persons are required to respond to the persons are required to respond to the persons are required to respond to the persons are required to the persons ar

INFORMATION DISCLOSURE

STATEMENT BY APPLICANT

Co	mplete if Known	
Application Number	09/682,363	
Filing Date	8/24/2001	—
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	_

	1	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	_
Examiner Initials	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), little of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), nublisher, city and/or country where numbered.	
	35	CORCELLI et al., Vibrational Energy Pooling in CO on NaCl(100): Methods, Journal of Chemical Physics, Vol. 116, No. 18 (2002)	1
	36	FIERZ et al., Time-Resolved 2-Photon Photolonization on Metallic Nanoparticles, Appl. Phys. B 68 (1999); http://www.ilp.physik.uni-essen.de/aeschlimann/abstratct.htm#6	1
	37	BEZANT et al., Intersubband Relaxation Lifetimes in p-GaAs/AlGaAs Quantum Wells Below the LO-Phonon Energy Measured in a Free Electron Laser Experiment, Semicond. Sci. Technol., 14 No 8 (1999)	
	38	BONDZIE et al., Oxygen Adsorption on Well-Defined Gold Particles on TiO2(110), Journal of Vacuum Science & Technology A: Vacuum, Surfaces and Films, Vol. 17, Issue 4, pp. 1717-1720 (1999)	
	39	HARRISON et al., Maximising the Population Inversion, by Optimizing the Depopulation Rate, in Far-Infared Quantum Cascade Lasers (2001)	İ
	40	HARRISON et al., The Carrier Dynamics of Terahertz Intersubband Lasers, Some Publishing Company (1999)	Ì
	41	FANN et al., Electron Thermalization in Gold, Physical Review B, Vol. 46, No. 20 (1992)	
		CUMMINGS et al., Ultrafast Impulsive Excitation of Coherent Longitudinal Acoustic Phonon Oscillations in Highly Potoexcited InSb, Applied Physics Letters, Vol. 79, No. 6 (2001)	-
	43	CHIANG, T.C., Photoemission Studies of Quantum Well States in Thin Films, Surface Science Reports 39, pp. 181-235 (2000)	-
	- 1	DEBERNARDI et al., Anharmonic Phonon Lifetimes in Semiconductors from Density-Functional Perturbation Theory, Physical Review Letters, Vol. 75, No. 9 (1995)	
	45	DAVIS et al., Kinetics and Dynamics of the Dissociative Chemisorption of Oxygen on Ir(111), J. Chem. Phys. 109 (3) (1997)	_

Examiner	D-4-
77	Date
Signature	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any Office, Y/ashington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Sheet

Sut stitute for form 1449/PTO

PTC/SB/088 (10-01)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Col	mplete if Known	
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

Examiner Iniliais* /	Cite No. 1	include name of the author (in CAPITAL LETTERS), tille of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), nublisher, city and/or country where mublished
	46	CHOI et al., Ultrafast Carrier Dynamics in a Highly Excited GaN Epilayer, Physical Review B., Vo. 63, 115315 (2001)
	47	DIEKHONER et al., Parallel Pathways in Methanol Decomposition on PT(111), Surface Science 409, pp. 384-391 (1998)
	48	DEMIDENKO et al., Piezoelectrically Active Acoustic Waves Confined in a Quantum Well and Their Amplification by electron Drift, Semiconductor Physics,
	49	Quantum Electronics & Optoelectronis, Vol. 3, No. 4, pp. 427-431 (2000) de PAULA et al., to X2 Electron Transfer Times in Type-II Superlattices Due to Emission of Confined Phonons, Appl. Phys. Lett. 65 (10) (1994)
	50	de PAULA et al., Carrier Capture via Confined Phonons in GaAs-AlGaAs Multiple Quantum Wells, Selcond, Sci. Technol, 9, pp. 730-732 (1994)
	51	DEMIDENKO et al., Amplification of Localized Acoustic Waves by the Electron Drift in a Quantum Well, Semiconductor Physics, Quantum Electronics & Optoelectronics, Vol. 2, No. 1, pp. 11-24 (1999)
	52	DEMIDENKO et al., Generation of Coherent Confined Acoustic Phonons by Drifting Electrons in Quantum Wire; Semiconductor Physics, Quantum
	53	Electronics & Optoelectronics, Vol. 3, No. 4, pp. 432-437 (2000).  DENZLER et al., Surface Femtochemistry: Ultrafast Reaction Dynamics Driven by Hot Electron Mediated Reaction Pathways, World Scientific (2001)
	54	FATTI et al., Temperature-Dependent Electron-lattice Thermalization in GaAs, Physical Review B, Vol. 59, No. 7 (1999)
•	<b>3</b> 5	ANASTASSAKIS et al., The Physics of Semiconductors, Vol. 2, World Scientific (1990)
	56	de PAULA et al., Carrier Capture Processes in Semiconductor Superlattices due to Emission of confined Phonons, J. Appl. Phys. 77 (12) (1995)

Examiner	Date	
Signature	Considered	

Burdon Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademerk Officer, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08B (10-01)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Palent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

U.S. Palent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Onded Complete Comple

Substitute for form 1449/PTO

### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Col	mplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-6

Examiner /	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the Kem (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue mimber(s), publisher, city and/or country where published	ŀ
		ENGSTROM et al., Comparing the Vibrational Properties of Low-Energy Modes of Molecular and an Atomic Adsorbate: CO and O on Pt(111), Journal of Chemical Physics, Vol. 112, No. 4 (2000)	a
	58	GLAVIN et al., Generation of High-Frequency Coherent Acoustic Phonons in a Weakly Coupled Superlattice, Applied Physics Letters, Vol. 74, No. 23 (1999)	
		FRIEDMAN, SiGe/Si Thz Laser Based on Transitions Between Inverted Mass Light-Hole and Heavy-Hole Subbands, Applied Physics Letters, Vol. 78, No. 4 (200	1
	60	ERMOSHIN et al., Vibrational Energy Relaxation of Adsorbate Vibrations: A theoretical Study of the H/Si(111) System, J. Chem. Phys. 105 (20) (1996.	
·····	61	GLAVIN et al., Acoustic Phonon Generation in A Superlattice Under the Hopping Perpendicular Transport, United Nations Educational Scientific and Cultural Organization and International Atomic Energy-Agency (1998)	
	62	GERGEN et al., Chemically Induced Electronic Excitations at Metal Surfaces, Science, Vol. 294 (2001).	
	63	HAGSTON et al., Simplified Treatment of Scattering Processes in Quantum Well Structures, Journal of Applied Physics, Vol. 90, No. 3 (2001).	
	64	HARRISON et al., Room Temperature Population Inversion in SiGe TASER design	s
<del></del>	65	HARRISON et al. The Carrier Dynamics of Terhertz Intersubband Lasers, Some Publishing Company (1999)	-
	66	HARRISON et al., Population-Inversion and Gain Estimates for a Semiconducor Taser	
a ari innana aran nafa adad i Arab i	67	HARRISON et al., Theoretical studies of Subband Carrier Lifetimes in an Optically Pumped Three-Level Terahertz Laser, Superlattices and Microstructures, Vol. 23, No. 2 (1998)	-

Examiner	Date
Signature	Considered

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Bur fen Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08B (10-01)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Linder the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB

Substitute for form 1449/PTO

#### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Co	mplete if Known	
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS		
Examiner Initials	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the criticle (when appropriate), title of the idem (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), outsisher, city and/or country where outsished
	68	HARRISON et al., The Carrier Dynamics o Far-Infared Intersubband Lasers and Tunable Emitters, www.ee.leeds.ac.uk/homes/ph/
	69	HESS et al., Hot Carrier Relaxation by Extreme Electron-LO Phonon Scattering in GaN
	70	HOHLFELD et al., Electron and Lattice Dynamics Following Optical Excitation of Metals, Chemical Physics 251, pp. 237-258 (2000)
	71	HUANG et al., Vibrational Promotion of Electron Transfer, Science, Vol. 290 (2000
****	72	KAWAKAMI et al., Quantum-well States in Copper Thin Films, Nature, Vol. 398 (1999)
	73	KOHLER et al., Enhanced Electron-Phonon Coupling at the Mo and W (110) Surfaces Induced by Adsorbed Hydrogen, mtrl-th/9510004 (1995)
	74	LEWIS et al., Continuum Elastic Theory of Adsorbate Vibrational Relaxation, J. Chem. Phys. 108 (3) (1998)
	75	LEWIS et al., Controlling Adsorbate Bivrational Lifetimes Using Superlattices, Physical Review B, Vol. 63, 085402 (2001)
	76	KOMIRENKO, Sergiy M., Phonons and Phonon-Related Effects in Prospective Nanoscale Semiconductor Devices (2000)
	77	HUANG et al., Observation of Vibrational Excitation and Deexcitation for NO(v=2) Scattering from Au(111): Evidence for Electron-Hole-Pair Mediate Energy Transfel Physical Review Letters, Vol. 84, No. 13 (2000)
ma iya qorq ah ispandor.A	78	LEWIS et al, Substrate-Adsorbate Coupling in Co-Adsorbed Copper, Physical Review Letters, Vol. 77, No. 26 (1996)

Examiner	Date
Signature	Considered

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Officer, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw the through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Sheet

PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0651-0331

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

of

Co	mplete if Known	_
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.1	thickude name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), nublisher, city and/or country where published.	,
	79	KRAUSS et al., Coherent Acoustic Phonons in a Semiconductor Quantum Dot, Physical Review Letters, Vol. 79, No. 25 (1997)	
		LUGLI et al., Interaction of Electrons with Interface Phonons in GaAs/AlAs and GaAs/AlGaAs Heterostructures,Semicond. Sci. Technol. 7 (1992)	ľ
A 14 A Milate. Tugli magazi sa	81	NIENHAUS et al., Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium, Physical Review Letters, Vol. 82, No. 2 (1999)	n
	82	MULET et al., Nanoscale Radiative Heat Transfer Between a Small Particle and a Plane Surface, Applied Physics Letters, Vol 78, No. 19 (2001)	
	83	NIENHAUS et al., Direct Detection of Electron-Hole Pairs Generated by Chemical Reactions on Metal Surfaces, Surface Science 445, pp. 335-342 (2000)	
	84	NIENHAUS, Hermann, Electronic Excitations by Chemical Reactions on Metal Surfaces, Surface Science Reports 45, pp. 1-78 (2002)	
***********	85	NOLAN et al., Translational Energy selection of Molecular Precursors to Oxygen Adsorption on Pt(111), Physical Review Letters, Vol. 81, No. 15 (1998)	
. }		NIENHAUS et al., Selective H Atom Sensors Using Ultrathin Ag/Si Schottky Diodes Applied Physics Letters, Vol. 74, No. 26 (1999)	۶, ا
	87	NOLAN et al., Molecularly Chemisorbed Intermediates to Oxygen Adsorption on Pt(111): A Molecular Beam and Electron Energy-Loss Spectroscopy Study, Journa of Chemical Physics, Vol. 1.11, No. 8 (1999)	   
	88	NOLAN et al., Direct Verification of a High-Translational-Energy Molecular Precurs to Oxygen Dissociation on Pd(111), Surface Science 419 (1998)	or
P No. Per Will State Mark State	89	OGAWA et al., Optical Intersubband Transitions and Femtosecond Dynamics in Ag/Fe(100) Quantum Wells, Physical Review Letters, Vol. 88, No. 11 (2002)	

lExaminer	Date	
Slanature	Considered	

<sup>\*</sup>EXAM NER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office. Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Substitute for form 1449/PTO

Sheet

PTO/SB/06A (08-03)
Approved for use through 07/31/2008, OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of Information unless it contains a velid OMB control number.

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete if Known				
	Application Number	09/682,363		
	Filing Date	8/24/2001		
	First Named Inventor	Anthony C. Zuppero		
	Art Unit	1753		
	Examiner Name	Alan D. Diamond		
	Attorney Docket Number	22122878-6		

	1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the
Examiner Initials	Cite No.1	item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s) numisher city and/or country where muhished
hallo ay -bill dan Albadahaan	90	PLIHAL et al., Role of Intra-Adsorbate Coulomb Correlations in Energy Transfer at Metal Surfaces, Physical Review B, Vol. 58, No. 4 (1998)
	1	PAGGEL et al., Quantum-Well States as Fabry-Perot Modes in a Thin-Film Electro
	92	PAGGEL et al., Quasiparticle Lifetime In Macroscopically Uniform Ag/Fe(100) Quantum Wells, Physical Review Letters, Vol. 81, No. 25 (1998)
	93	PAGGEL et al., Quantum Well Photoemission from Atomically Uniform Ag Films: Determination of Electronic Band Structure and Quasi-Particle Lifetime in Ag(100) Applied-Surface-Science-162-163, pp78-85-(2000)
	94	PERSSON et al., A First-Principles Potential Energy Surface for Eley-Rideal Reaction Dynamics of H Atoms on Cu(111), Journal of Chemical Physics, Vol. 110 No. 4 (1999)
	1	OZGUR et al., Control of Coherent Acoustic Phonons in InGaN Multiple Quantum Wells, arXiv:cond-mat/0010170 (2000)
	96	STANTON et al., Energy Relaxation by Hot Electrons in n-Gan Epilayers, Journal Applied Physics, Vol. 89, No. 2 (2001)
en la capación de	97	STIPE et al., Atomistic Studies of O2 Dissociation on Pt(111) induced by Photons, Electrons and by Heating, J. Chem. Phys. 107 (16) (1997)
-	98	SUN et al., Phonon Pumped SiGe/Si Interminiband Terahertz Laser, pp. 1-11
To Think the Part Part	99	SOREF et al., Terahertz Gain in a SiGe/Si Quantum Staircase Utilizing the Heavy-Hole Inverted Effective Mass, Applied Physics Letters, Vol. 79, No. 22 (200
	100	QU et al., Long-Lived Phonons, Physical Review B, Vol. 48, No. 9 (1993)

_			
	Examiner	Date	
_	Signature i	Considered	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any commants on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office. Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)

Approved for use through 07/31/2008. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Unjer the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Complete if Known Substitute for form 1449/PTO **Application Number** 09/682,363 Filing Date 8/24/2001 INFORMATION DISCLOSURE First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT Art Unit 1753 (Use as many sheets as necessary) Examiner Name Alan D. Diamond Attorney Docket Number 22122878-6

include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), little of the		-	
i kaminer initials	Cite No.1	item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), nublisher, bliv and/or country where published.	ľ
	101	PONTIUS, et al., Size-Dependent Hot-Electron Dynamics in Small Pdn-Clusters, Journal of Chemical Physics, Vol. 115, No. 22 (2001)	
	102	SMIT et al., Enhanced Tunneling Across Nanometer-Scale Metal-Semiconductor Interfaces, Applied Physics Letters, Vol. 80, No. 14 (2002)	
		QIU et al., Long-Distance and Damping of Low-Frequency Phonon Polariton in LiNbO3, Physical Review B, Vol. 56, No. 10 (1997)	
	104	ROUSSE et al, Non-Thermal Melting in Semiconductors Measured at Femtosecor Resolution, Nature, Vol. 410 (2001)	d
	105	SCHELLING et al., Phonon Wave-Packet Dynamics at Semiconductor Interfaces t Molecular-Dynamics Simulation, Applied Physics Letters, Vol. 80, No. 14 (2002)	у
	106	SHIKIN et al., Phase Accumulation Model Analysis of Quantum Well Resonances Formed in Ultra-Thin Ag, Au Films on W(110), Surface Science (2001)	
		SNOW et al., Ultrathin PtSi Layers Paterned by Scanned Probe Lithography, Appli Physics Letters, Vol. 79, No. 8 (2001)	1
re realization billionis	108 I	PRABHU et al., Femtosecond Energy Relaxation of Nonthermal Electrons Injected p-doped GaAs Base of a Heterojunction Bipolar Transistor, Journal of Applied Physics, Vol. 90, No. 1 (2001)	
	109	TSAI et al., Theoretical Modeling of Nonequilibrium Optical Phonons and Electron Energy Relaxation in GaN, Journal of Applied Physics, Vol. 85, No. 3 (1999)	-
	110	TRIPA et al., Surface-Aligned Photochemistry: Aiming Reactive Oxygen Atoms Alo a Single Crystal Surface, Journal of Chemical Physics, Vol. 112, No. 5 (2000)	'n
	111	TRIPA et al., Surface-Aligned Reaction of Photogenerated Oxygen Atoms with Carbon Monoxide Targets, Nature, Vol. 398 (1999)	

_			
. :	Examiner	Date	
L	Signature	Considered	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Oraw line through citation if not in conformance and no considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique cliation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2008. OMB 0851-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Complete If Known Substitute for form 1449/PTO **Application Number** 09/682,363 Filing Date 8/24/2001 INFORMATION DISCLOSURE First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT Art Unit 1753 (Use as many sheets as necessary) Examiner Name Alan D. Diamond Attorney Docket Number | 22122878-6

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS  include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the litern (book, magazine, journal, serial, symposium, catalog, etc.), date, pagg(s), volume-issue			Γ
Initials	No.1	number(s) outhlisher city and/or country where outhlished	Ļ
	112	TRIPA et al., Kinetics Measurements of CO Photo-Oxidation on Pt(111), J. Chem. Phys. 105 (4) (1996)	
	113	TAYLOR et al., Strong Electron-LO Phonon Scattering and Hot Carrier Relaxatin in GaN_Abstract.No. ha249KW3	
	114	SUN et al., Phonon-Pumped Terahertz Gain in n-Type GaAs/AlGaAs Superlattices Applied Physics Letters, Vol. 78, No. 22 (2001)	
		TOM et al., Coherent Phonon and Electron Spectroscopy on Surfaces Using Time-Resolved Second-Harmonic Generation	
		TIUSAN et al., Quantum Coherent Transport Versus Diode-Like Effect in Semiconductor-Free Metal/Insulator Structure, Applled Physics Letters, Vol. 79, No. 25 (2001)	
2	117	STROMQUIST et al., The Dynamics of H Absorption in and Adsorption on Cu(111 Surface Science 397, pp. 382-394 (1998)	,
	118	TRIPA et al., Surface-Aligned Photochemistry: Alming Reactive Oxygen Atoms Alc a Single Crystal Surface, Journal of Chemical Physics, Vol. 112, No. 5 (2000)	n
	119	TSAI et al., Theoretical Modeling of Nonequilibrium Optical Phonons and Electron Energy Relaxation in GaN, Journal of Applied Physics, Vol. 85, No. 3 (1999)	
	120	WEBER et al., Carrier Capture Processes In GaAs-AlGaAs Quantum Wells Due to Emission of Conflend Phonons, Appl. Phys. Lett. 63 (22) (1993)	_
	121	WINTTERLIN et al., Atomic and Macroscopic Reaction Rates of a Surface-Catalyz Reaction, Science, Vol. 278 (1997)	е
	122	YEO et al., Calorimetric HEats for CO and Oxygen Adsorptin and for the Catalytic CO Oxidation Reaction on Pt{111}, J. Chem. Phys. 106 (1) (1997)	-

Examiner	Date
Signature	Considered

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Appilcant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006, OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Uncler the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete If Known		
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit .	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

	OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS		
Examiner Inklais	Cite No. 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the titem (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city/and/or country where published	
	123	WITTE et al., Low Frquency Vibrational Modes of Adsorbates, Surface Science, N 1362 (2002)	ib
	124	VALDEN et al., Onset of Catalytic Activity of Gold Clusters on Titania with The Appearance of Nonmetallic Properties, Science, Vol. 281 (1998)	Ī
·	l	XU et al., Electrical Generation of Terahertz Electromagnetic Pulses by Hot-Electrin Quantum Wells, Superlattices and Microstructures, Vol. 22, No. 1 (1997)	ı
	126	WANKE et al., Injectoriess Quantum-Cascade Lasers, Applied Physics Letters, Vo 78, No. 25 (2001)	1
	127	ZHDANOV, Vladimir P., Nm-Sized Metal Particles on a Semiconductor Surface, Schottky Model, etc., Surface Science, SUSC 2931 (2002)	
	128	YEO et al., Calorimetric Investigation of NO and O adsorptin on Pd(100) and the Influence of Preadsorbed Carbon, J. Chem. Phys. 106 (5) (1997)	
	129	ZAMBELLI et al., Complex Pathways in Dissociative Adsorption of Oxygen on Platinum, Nature, Vol. 390 (1997)	
·	130	ZHDANOV et al., Substrate-Mediated Photoinduced Chemical Reactions on Ultrat Metal Films, Surface Science 432 (1999)	h
	131	ALTUKHOV et al., Towards Si1-xGex Quantum-well Resonant-State Terahertz Laser, Applied Physics Letters, Vol. 79, No. 24 (2001)	
	132	FRIEDMAN et al., SiGe/Si THz Laser Based on Transitions Between Inverted Mas Light-Hole and Heavy-Hole Subbands, Applied Physics Letters, Vol. 78, No. 4 (200	5
·	133	HARRISON et al., The Carrier Dynamics of Terhertz Intersubband Lasers, Some Publishing Company (1999)	-

Examiner	Date
Signature	Considered

<sup>\*</sup>EXAMINER: Initial If reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique ditation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTC/SB/08A (08-03)

Approved for use through 07/31/2006, OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Complete If Known Substitute for form 1449/PTO **Application Number** 09/682,363 Filing Date 8/24/2001 INFORMATION DISCLOSURE First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT Art Unit 1753 (Use as many sheets as necessary) Examiner Name Alan D. Diamond 22122878-6 Attorney Docket Number Sheet

		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the			
Examiner tritials	Cite No.	Rem (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue			
	134	HARRISON et al., The Carrier Dynamics of Far-Infared Intersubband Lasers and Tunable Emitters, www.ee.leeds.ac.uk/homes/ph/			
	:	HARRISON et al., Theoretical Studies of Subband Carrier Lifetimes in an Optically Pumped Three-Level Terhertz Laser, Superlattices and Microstructures, Vol. 23, N 2-(1998)	ŀ		
	136	HARRISON et al., Room Temperature Populatin Inversion in SiGe TASER Design			
	137	HARRISON et al., Population-Invension and Gain Estimates for a Semiconductor TASER,			
	138	SUN et al., Phonon Pumped SiGe/Si Interminiband Terahertz Laser			
	139	SOREF et al., Terahertz Gain in a SiGe/Si Quantum Staircase Utlizing the Heavy-Hole Inverted Effective Mass, Applied Physics Letters, vol. 79, No. 22 (200			
P di rin <i>facil</i> i dilla dia colonia 1444 <u>144</u> 5 144	140	SUN et al., Intersubband Lasing Lifetimes of SiGe/Si and Ga As/AlGaAs Multiple Quantum Well Structures, Appl. Phys. Letter 66 (25) (1995)			
	141	SUN et al., Phonon-Pumped Terhertz Gain in n-Type GaAs/AlGaAs Superlattices, Applied Physics Letters, Vol. 78, No. 22 (2001)	-		
	142	ALBANO et al., Adsorption-Kinetics of Hot Dimers, SciSearch Databaseof the Institute for Scientific Information (1999)			
		CASASSA et al., Time-Resolved Measurements of Vibrational Relaxatin of Molecules on surfaces: Hydroxyl Groups on Silica Surfaces, Journal of Vacuum Science & Technology A: Vacuum, Surfaces, and Films, Vol. 3, Issue 3 (1985)			
	144	CAVANAGH et al., Vibrational Relaxation of Adsorbed Molecules: Comparison wit Relaxation Rates of Model Compunds, Journal of Vacuum Science & Technology Jacuum, Surfaces and Films, Vol. 5, Issue 4 (1987)	h		

Examiner	Date
Signature	Considered

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademerk Office, V/sshington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Sheat

PTO/SB/08A (08-03)

Approved for use through 07/31/2006, OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete if Known		
Application Number	09/682,363	
Filing Date	8/24/2001	_
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS
Examiner Initials	Cite No.1	Include name of the author (in CAPITAL LETTERS), lide of the article (when appropriate), title of the litem (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published
·/-	145	HYH et al., Methanol Oxidation of Palladium Compared to Rhodium at Ambient Pressures as Probed by Surface-Enhanced Raman and Mass Spectroscopies, Journal of Catalysis, Vol. 174 (2) (1998)
	146	GUMHALTER et al., Effect of Electronic Relaxation on Covalent Adsorption React Rates, Physical Review B, Vol. 30, Issue 6 (1984)
The special terms	147	NOLAN et al., Surface Science, Direct Verification of a High-Translational-Energy Molecular Precursor to Oxygen Dissociation on Pd(111), Surface Science, Vol. 41 (1998)
		PHIHAL et al., Role of Intra-Adsorbate Coulomb Correlations in Energy Transfer a Metal Surfaces, Physical Review B, Vol. 58, Issue 4 (1998)
	149	TULLY et al., Electronic and Phonon Mechanisms of vibrational Relaxation: CO on Cu(100), J. Vac. Sci. Technol. A 11(4) (1993)
	- 1	DiMATTEO et al., Enhanced Photogeneration of Carriers in a Semocnductor Via Coupling Across a Nonisothermal Nonascale Vacuum Gap, Applied Physics Letter Vol. 79, Issue 12 (2001)
	151	TRIPA et al., Surface-Aligned Photochemistry: Aiming Reactive Oxygen Atoms Alo a Single Crystal Surface, The Journal of Chemical Physics, Vol. 112, Issue 5 (200
	152	YATES et al., Special Adsorption and Reaction Effects at Step Defect Sites on Platinum Single Crystal Surfaces (2000)
	153	DEKORSY et al, Coherent Acoustic Phons in Semiconductor Superlattics, phys. stat. sp;. (b) 215, p 425-430 (1999)
	Tab. do., a., a.	

ــــــــــــــــــــــــــــــــــــــ			
Evaminar	,		
⊨xaminer		Date	
Skınature		1 1	
		Considered	
W & & & 1 & 1 & 1 & 1			

<sup>\*</sup>EXAMINE:R: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03) Approved for use through 07/31/2008. OMB 0851-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Uniter the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of Information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known				
Application Number	09/682,363			
Filing Date	8/24/2001			
First Named Inventor	Anthony C. Zuppero			
Art Unit	1753			
Examiner Name	Alan D. Diamond			
Attorney Docket Number	22122878-6			

			U.S. PATE	NT DOCUMENTS	
Examiner Initials		Document Number  Number-Kind Code® (# known	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant
	$\overline{}$	us. 6,119,651	09-19-2000	Anderson	Figures Appear
	2	US- 6,114,620	09-055-2000	Zuppero et al.	
	3	us. 5,408,967	04-25-1995	Foster	
·	4	us. 5,293,857	03-15-1994	Meyer	
	5	ug2002/0017827	02-14-2002	Zuppero et al.	
		us-2002/012108	9-5-2002	Zuppero et al.	
		US-			
		US-			
		U8-			
		US-			
		US-			
		US-			
	<b></b> -	US-			<u> </u>
		US-			
		US-			
	·	US-			
		US-			
		US-	<del></del>	······································	<u> </u>
	<del></del>	U8-			

	FOREIGN PATENT DOCUMENTS						
Examiner Initials		Foreign Patent Document  COLERY Code 2 - Number 4 - Kind Code 2 (Frances)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	74	
			***************************************			E	
			<del></del>			_	

Examiner	•	Date	
Signature		Considered	

English tanguage Transaction is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case.

Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant's unique citation designation number (optional). See Kinds Codes of USPTO Patent Documents at <a href="https://www.uspto.gov">www.uspto.gov</a> or MPEP 901.14. Serier Office that issued the document, by the two-letter code (WIPO Standard 97.3). For Japanese patent documents, the indicution of the year of the reign of the Emperor must precede the serial number of the patent document. Wind of document by the appropriate symbols as indicated on the document under WIPO Standard 97. 16 if possible. Applicant is to place a check mark here if English language Translation is attached.

Sheet

PTO/SB/08A (08-03)
Approved for use through 07/31/2006, OMB 0651-0031
U.S. Patent and Tredemark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. Substitute for form 1449/PTO

# **INFORMATION DISCLOSURE** STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known Application Number 09/682,363 Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 **Examiner Name** Alan D. Diamond Attorney Docket Number 22122878-6

			U.S. PATE	NT DOCUMENTS	
Examiner Initials		Docsiment Number Number-Kind Code <sup>2</sup> (if known	Publication Date	Name of Patentae or Applicant of Cited Document	Pages, Columns, Linus, Where Relevant Passages or Relevant Figures Appear
	1	us. 4,590,507	05-20-1986	CAPASSO, et al.	Figures Appear
	2	us- 4,686,350	08-11-1987	CAPASSO, et al.	
	3	US_ 4,849,799	07-18-1989	CAPASSO, et al.	
	4	us. 5,311,009	05-10-1994	CAPASSO, et al.	
	5	us- 6,084,173	07-04-2000	DIMATTEO	
	6	US- 6,232,546	05-15-2001	DIMATTEO, et al.	
		US-			
		US-			
		US-			
		us-	··········· •		
		U8-	· ·	· · · · · · · · · · · · · · · · · · ·	
		US-			
		US-	······································		
		US-			
·		U8-	<del>-</del>	** ***	
		US-	<del>_</del>	**************************************	
		U8-	<del></del>		
		US-		r	
	<u> </u>	US-		· · · · · · · · · · · · · · · · · · ·	
	L	US-			l

	FOREIGN PATENT DOCUMENTS					
Examiner Initials	Cite No.1	Foreign Patent Document  County Code 3 - Number 4 - Kind Code 3 (Finance)	Publication Date	Name of Patentes or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	70
	<b>-</b>					_
						-
	<u> </u>					
			***			
			**			
	<del>                                     </del>		ļ <u></u>		T-778-13	

بييوببيب حصار		
Examiner	Date	
Skynature	Considered	

\*EXAMINER: Initial if reference considered, whether or not cliation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at <a href="https://www.uspto.gov">www.uspto.gov</a> or MPEP 801.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WiPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indivision of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

English sangulage Transacion is students.

Burken Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Tracemark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Petent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Inder the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

#### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

	Complete if Known					
	Application Number	09/682,363				
	Filing Date	8/24/2001				
	First Named Inventor	Anthony C. Zuppero				
	Art Unit	1753				
	Examiner Name	Alan D. Diamond				
_	Attorney Docket Number	22122878-6				

		7 mostley Gooder Number   22122878-6	
		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initi ala	CRe No.1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue mumber(s), publisher, city end/or country where published.	Ī
	7	AUERBACH, Daniel J.; "Hitting the Surface-Softly"; Science, 294, (2001), pp. 2488-2489	ľ
	8	BONDZIR, V. A., et al.;; "Oxygen adsorption gold particles TiO2(110)"; J. Vac. Sci. Tech. A., (1999) 17, pp. 1717 and figure 3	T
	9	BOULTER, James; "Laboratory Measurement of OH "; http://pearll.lanl.gov/wsa2002/WSA2002talks.pdf	
	10	CHAN H.Y.H., et al.; "Methanol Oxidation On Palladium Compared To Rhodium; J. Catalysis v. 174(#2) pp. 191-200 (1998) (abstract and figure 1 only)	
	11	CHIANG, TC.; "Photoemission studies of quantum well states in thin films; Surf. Sci. Rpts.39 (2000) pp 181-235	l
	12	CHUBB, D. L., et al; "Semiconductor Silicon as a Selective Emitter"; http://www.thermopv.org/TPV5-2-05-Chubb.pdf (abstract only)	r
	13	CORCELLI, S. A., et al.; "Vibrational energy pooling in CO on NaCl(100) "; J. Chem. Phys.(2002) 116, pp. 8079-8092	-
	14	DANESE, A., et al.; "Influence of the substrate electronic structure on metallic quantum well"; Prog. Surf. Sci., 67, (2001), pp 249-258	-
	15	DAVIS, J. B., et al.; "Kinetics and dynamics of the dissociative chemisorption of oxygen on Ir(111)"; J. Chem. Phys. 107 (3), (1997), pp 943-952	-

يديورنوك مبسنتاها		
Examiner	 Date	
Signature		
	Considered	

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINEF: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant'ıı unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Sheet

PTO/SB/08A (08-03)
Approved for use through 07/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Uncer the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. Substitute for form 1449/PTO

# **INFORMATION DISCLOSURE** STATEMENT BY APPLICANT

Complete if Known			
Application Number	09/682,363		
Filing Date	8/24/2001		
First Named Inventor	Anthony C. Zuppero		
Art Unit	1753		
Examiner Name	Alan D. Diamond		
Attorney Docket Number	22122878-6		

Examiner	Cite	OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS broude name of the author (in CAPITAL LETTERS), site of the article (when appropriate), title of the	Ţ
Initia is	No.1	nem (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), vokume-issue number(s), publisher, city and/or country where published	l
	16	DIEKHONER, L., et al.; "Parallel pathways in methanol Pt(111)"; Surf. Sci. 409 (1998) pp 384-391	Ţ
	17	DIESING, D., et al.; "Aluminium oxide tunnel junctions"; Thin Solid Films, Vol. 342 (1-2) (1999) pp. 282-290	1
	18	DIMATTEO, R. S., et al.; "Enhanced photogeneration of carriers vacuum gap"; Appl. Phys. Let. (2001) 79, pp. 1894-1896	
	19	DIMATTEO, R. S., et al.; "Introduction to and Experimental Demonstration of Micron-gap ThermoPhotoVoltaics"; http://www.thermopv.org/37DiMatteo.html (abstract only)	f
	20	DOGWILER, Urs, et al.; "Two-dimensional catalytically stabilized lean methane-air"; Combustion and Flame, (1999), 116(1,2), pp 243-258	1
	21	ECHENIQUE, P. M., et al.; "Surface-state electron dynamics in noble metals"; Prog. Surf. Sci., 67, (2001), pp 271-283	T
	22	ENDO, Makoto, et al.; "Oxidation of methanol on Pt(111)"; Surf. Sci. 441 (1999) L931-L937, Surf. Sci. Letters	l
	23	FAN, C. Y., et al.; "The oxidation of CO on RuO2"; J. Chem. Phys. 114, (2001), pp. 10058-10062	
	24	FANN, W.S., et al.; "Electron thermalization in gold"; Phys. Rev. B (1992) 46 pp. 13592-13595	l
			l
	ı		

Examiner		Date
Signature	-	Considered
	فيتنا والمنافق والمنافق المنافق المنافق والمنافق والمنافق والمنافق والمنافق والمنافق والمنافق والمنافق والمنافق	L'Outisidateut

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Sheat

PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0861-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Light the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. Substitute for form 1449/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Co	mplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-6

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials	Cite No.1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, megazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), muhisher, city and/or country where number(s).	Ţ
	25	GER, Adam T., et al.; "The dynamics of O2 adsorption on Pt(533)"; J. Chem. Phys.(2000) 113, pp. 10333-10343	T
	26	GERGEN, Brian, et al.; "Chemically Induced Electronic Excitations at Metal Surfaces"; Science,294, (2001) pp. 2521-2523	1
	27	GULIANTS, Elcna A, et al.; "A 0.5-µm-thick polycrystalline silicon Schottky"; Appl. Phys. Let., (2002), 80, pp. 1474-1476	$\dagger$
-	28	GUMHALTER, B., et al.; "Effect of electronic relaxation adsorption reaction rates"; Phys. Rev. B (1984) 30 pp. 3179-3190	$\dagger$
	29	HALONEN, Lauri, et al.; "Reactivity of vibrationally excited methane on nickel"; J. Chem. Phys. (2001) 115, pp. 5611-5619	$\dagger$
	30	HASEGAWA, Y., et al.; "Modification of electron standing wave Pd; Surf. Sci., in press, 11 April 2002	$\vdash$
-	31	HENRY, Claude R.; "Catalytic activity nanometer-sized metal clusters"; Applied Surf. Sci., 164, (2000) pp 252-259	
	32	HESS, S., et al.; "Hot Carrier Relaxation Phonon Scattering in GaN"; http://www.physics.ox.ac.uk/rtaylor/images/hot%20carrier%20poster.pdf	<del> </del>
	33	HO, Wilson; http://www.lassp.comell.edu/lassp_data/wilsonho.html	
	ļ		

Fuendan			
Examiner	5 I v	<b>~</b> .	
	1	Date	!
Olaman days	l		
Signature	1	OI	
	<u> </u>	Considered	
		**************************************	·

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is stlached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. The will vary depending upon the needs of the individual case. Any office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Shee

PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Untier the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Complete if Known Substitute for form 1449/PTO **Application Number** 09/682,363

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 Examiner Name Alan D. Diamond Attorney Docket Number 22122878-6

Examiner	Cite	OTHER PRIOR ART — NON PATENT LITERATURE DOCUMENTS Include name of the author (in CAPITAL LETTERS), title of the erticle (when appropriate), title of the item (book, megazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue	_
initials"	No.1	the barra, publisher, ploy and/or country where roublished	
	34	HOHLFRLD, J, et al.; "Electron and lattice dynamics optical excitation of metals"; Chemical Physics, 251 (2000) pp 237-258	
	35	HONKALA, Karoliina, et al.; "Ab initio study of O2 precursor states on the Pd(111)"; J. Chem. Phys. (2001) 115, pp. 2297-2302	
	36	HOU, H.; Y., et al.; "Chemical Interactions of Super-Excited Molecules on Metal Surfaces"; http://www2.chem.ucsb.edu/~wodtke/papers/danl.pdf	-
· ·	37	HOU, H., et al.; "Direct multiquantum relaxation of highly vibrationally excited NO"; J. Chem. Phys., 110, (1999) pp 10660 - 10663	
	38	HUANG Y., et al.; "Observation of Vibrational Excitation and Deexcitation for NO from Au(111)"; Phys. Rev. Lett., 84, (2000) pp 2985 - 2988	
	39	HUANG, Yuhui, et al.; "Vibrational Promotion of Electron Transfer"; SCIENCE, VOL 290, 6 OCTOBER 2000, pp 111 - 113	
	40	IBH; "NanoLED overview"; http://www.ibh.co.uk/products/light_sources/nanoled_main.htm	-
	41	IBH; "Red picosecond laser sources"; http://www.ibh.co.uk/products/light_sources/nanoled/heads/red_laser_heads.htm	
	42	IFTIMIA, Ileana, et al.; "Theory scattering of molecules from surface"; Phys. Rev. B (2002) 65, Article 125401	1
			1
			1

Examiner		
	Date	•
Slanature	24.0	
Sign ature	Considered	
	CONSIDER	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any office, Wast ington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Sheet

PTO/SB/08A (08-03)

Approved for use through 07/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Co	mplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-6

سيبيب سعد	T	OTHER PRIOR ART — NON PATENT LITERATURE DOCUMENTS Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the	_
Examiner Initials	Cite No. 1	itam (book, magazine, journal, serial, symposium, catalog, etc.), date, page(e), volume-tasue number(a), nublisher, city and/or country where published	
	43	ISHIKAWA, Yasıryuki, et al.; "Energetics of H2O dissociation and COads+OHads reaction Pt"; Surf. Sci. preprints SUSC 12830, 27 April 2002	
	44	JOHNSON, R. Colin; "Molecular substitutionterahertz switch arrays"; EE Times, (04/10/00, 3:35 p.m. EST) http://www.eet.com/story/OEG20000410S0057	1
	45	KAO, Chia-Ling, et al.; "The adsorption molecular carbon dioxide on Pt(111) and Pd(111)"; Surf. Sci., (2001) Article 12570	Ì
	46	KATZ, Gil, et al.; "Non-Adiabatic Charge Transfer Process of Oxygen on metal Surfaces"; Surf. Sci. 425(1) (1999) pp. 1-14	
	47	KAWAKAMI, R. K., et al.; "Quantum-well states in copper thin films"; Nature, 398, (1999) pp 132 - 134	
	48	KOMEDA, T., et al.; "Lateral Hopping of Molecules Induced by Excitation of Internal Vibration"; Science, 295, (2002) pp 2055-2058	1
	49	LEWIS, Steven P., et al.; "Continuum Elastic Theory of Adsorbate Vibrational Relaxation"; J. Chem. Phys. 108, 1157 (1998)	$\dagger$
	50	LEWIS, Steven P., et al.; "Substrate-adsorbate coupling in CO-adsorbed copper"; Phys. Rev. Lett. 77, 5241 (1996)	Ī
	51	LI, Shenping, et al.; "Generation of wavelength-tunable single-mode picosecond pulses"; Appl. Phys. Let. 76, (2000) pp 3676 - 3678	
			l

			 	 _
Examiner	•	Date		
Signature		Considered		

<sup>\*</sup>EXAMINEI I: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will very depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Tradement Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Co	mplete if Known	
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attomey Docket Number	22122878-6	

Examiner Initis is	Cite No.1	include name of the author (in CAPITAL LETTERS), tills of the article (when appropriate), titls of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), nublisher, city and/or country where nublisher.	T
	52	MITSUI, T., et al.; "Coadsorption and interactions of O and H on Pd(111)"; Surf. Sci., Article 12767, (2002)	1
	53	MOULA, Md. Golam, et al.; "Velocity distribution of desorbing CO2 in CO oxidation on Pd(110)"; Applied Surf. Sci., 169-170, pp 268-272 (2001)	Ī
	54	MULET, Jean-Philippe, et al.; "Nanoscale radiative heat transfer between a small particle"; Appl. Phys. Let., 78, (2001) p 2931	1
	55	NIENHAUS, H, et al.; "Direct detection of electron-hole pairs generated by chemical reactions on metal surfaces"; Surf. Sci. 445 (2000) pp 335-342	T
	56	NIENHAUS, H.; "Electronic excitations by chemical reactions on metal surfaces"; Surf. Sci. Rpts. 45 (2002) pp 1 - 78	
•	57	NIENHAUS, H., et al.; "Sclective H atom sensors using ultrathin Ag/Si Schottky diodes"; Appl. Phys. Let. (1999) 74, pp. 4046-4048	T
	58	NIENHAUS, Hermann; "Electron-hole pair creation by reactions at metal surfaces"; APS, March 20-26, 1999, Atlanta, GA, Session SC33 [SC33.01]	T
	59	NIENHAUS, H, et al.; "Electron-Hole Pair Creation at Ag and Cu of Atomic Hydrogen and Deuterium"; Phys. Rev. Lett., 82, (1999) pp. 446-449	
	60	NOLAN P. D., et al.; "Direct verification of precursor to oxygen dissociation on Pd(111)"; Surf. Sci. v. 419(#1) pp. L107-L113, (1998)	T
		`	
			ĺ

Examiner	Date
Signature	Considered
The state of the s	Considered

<sup>\*</sup>EXAMINET: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments in the amount of time you are required to complete this form should be sent to the Chief information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Sub titute for form 1449/PTO

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known **Application Number** 09/682,363 Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 Examiner Name Alan D. Diamond Attorney Docket Number 22122878-6

	7	OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	
Examiner Initi ils	Cite No.1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriato), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), number(s), number of page(s), volume-issue	T2
	61	NOLAN, P. D., et al.; "Molecularly chemisorbed intermediates to oxygen adsorption on Pt"; J. Chem. Phys. 111, (1999), pp 3696 - 3704	
	62	NOLAN, P. D., et al.; "Translational Precursors to Oxygen Adsorption on Pt(111)"; Phys. Rev. Lett., 81, (1998) pp 3179 - 3182	
	63	OGAWA, S., et al.; "Optical and Femtosecond Dynamics in Ag/Fe(100) Quantum Wells"; Phys. Rev. Lett. 88, 116801 (2002)	
	64	PAGGEL, J. J., et al.; "Quantum-Well States as Fabry-Pérot Modes in a"; Science, 283, (1999), pp 1709 - 1711	
	65	PAGGEL, J. J., et al.; "Quasiparticle Lifetime Ag/Fe(100) Quantum Wells"; Phys. Rev. Lett. (1998) 81, pp. 5632-5635	-
	66	PAGGEL, J.J., et al.; "Quantum well photoemission from atomically uniform Ag films"; Applied Surf. Sci., 162 –163, (2000), pp 78 –85	
	67	RETTNER, C. T., et al; "Dynamics chemisorption of O2 on Pt(111) chemisorbed precursor"; J. Chem. Phys. (1991) 94, pp. 1626-1635 (abstract only)	
	68	RINNBMO, Mats; "Catalytic Ignition and Kinetic Phase Transitions"; 1996; http://www2.lib.chalmers.se/ctb/diss/doc/9596/RinnemoMats.html	
	69	ROBERTSON, A. J. B.; "Catalysis of Gas Reactions by Metals"; Logos Press Limited; 1970; LC #70-80936; pp. 1-5, 10, 41; Great Britain, Adlard & son Ltd	
	_		

Frank -	
Examiner	Date
l Signature I	· · · · · · · · · · · · · · · · · · ·
Sidni Rufe	Considered

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English tanguage Translation is attached.

Burden Hour Statement: This form to estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents,

Sheet

PTO/SB/08A (08-03)
Approved for use through 07/31/2008. OMB 0551-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Un ter the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB or

Substitute for form 1449/PTO

### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete If Known		
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	—

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials	Cite No.1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where outlished	T <sup>2</sup>
	70	SCHEWE, P., et al.; "CO2 Production at the Single-Molecule Level"; http://www.aip.org/enews/physnews/2001/split/561-1.html	
	71	SHENG, H., et al.; "Schottky diode with Ag on (110) epitaxial ZnO film"; Appl. Phys. Let. (2002) 80, pp. 2132-2134	
	72	SMIT, G. D. J., et al.; "Enhanced tunneling across nanometer-scale metal-semiconductor interfaces"; Appl. Phys. Let.(2002) 80, pp. 2568-2570	
	73	SNOW, B. S., et al.; "Ultrathin PtSi layers patterned by scanned probe lithography"; Appl. Phys. Let. (2001) 79, pp. 1109-1111	
	74	STIPE, B. C., et al.; "Atomistic studies of O2 dissociation on Pt(111) induced by photons"; J. Chem. Phys., (1997) 107 pp. 6443-6447	
	75	SUN, CK., et al.; "Femtosecond studies of carrier dynamics in InGaN"; Appl. Phys. Let. (1997) 70 pp. 2004-2006	
	76	SVENSSON, K., et al.; "Dipole Active Vibrational Motion in the Physisorption Well"; Phys. Rev. Lett., 78, (1997) pp 2016-2019	
	77	TARVER, Craig M.; "Non-Equilibrium Chemical Kinetic Explosive Reactive Flows"; Fall 1999 IMA Workshop: High-Speed Combustion in Gaseous and Condensed-Phase	
	78	TAYLOR, R.A., et al.; "Strong Electron-LO Phonon Scattering and Hot Carrier Relaxation in GaN"; http://www.physics.ox.ac.uk/rtaylor/images/ha249kw3.pdf	

Examiner I	l Data	· · · · · · · · · · · · · · · · · · ·
	Date	
Signature		
Siujaluie	Consid	jeredi
		21001

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Ho is Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Sheet

Approved for use through 07/31/2006. OMB 06 51-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

Complete if Known Substitute for form 1449/PTO

### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete if Known		
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878 6	

	_	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initi its	Cite No.1	trolude name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journel, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country when published.	T
	79	TEODORESCU, C.M., et al.; "Structure of Fe layers grown on InAs"; Appl. Surf. Sci., 166, (2000) pp 137-142	T
	80	TIUSAN, C., et al.; "Quantum coherent transport versus diode-like effect in"; Appl. Phys. Let. 79, (2001) pp 4231-4233	t
	81	TRIPA, C. Emil, et al.; "Surface-aligned photochemistry: Aiming reactive oxygen atoms"; J. Chem. Phys., (2000) 112 pp. 2463-2469	f
	82	TRIPA, C. Emil, et al.; "Surface-aligned reaction of photogenerated oxygen atoms with"; Nature 398, pp 591 - 593 (1999)	
	83	TRIPA, C. Emil; "Special Adsorption and Reaction Effects at Step Defect Sites on Platinum"; http://www.chem.pitt.edu/thesis.html#tripa (abstract only)	-
	84	VOLKENING, S., et al.; "CO oxidation on Pt(111)—Scanning tunneling microscopy experiments"; J. Chem. Phys. (2001) 114, pp. 6382-6395	$\vdash$
	85	WATSON, D.T.P., et al.; "Isothermal and temperature-programmed oxidation of CH over Pt"; Surf. Sci. preprint, year 2001	
	86 .	WATSON, D.T.P., et al.; "Surface products of the dissociative adsorption of methane on Pt"; Surf. Sci. preprint, c. October 2001	
	ŀ		

Evereires	
Examiner	Date
Signature	• • • • • • • • • • • • • • • • • • •
C Sign store !	Considered

<sup>\*</sup>EXAMINER Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> AppRicent's unique citation designation number (optional). 2 Applicant is to place a check mark here # English tanguage Translation is attached.

Burden How Statement: This form is estimated to take 2.0 hours to complete. Time will very depending upon the needs of the individual case. Any Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of Information unless it contains a valid OMB control number.

Complete if Known Substitute for form 1449/PTO Application Number 09/682,363 Filing Date **INFORMATION DISCLOSURE** 8/24/2001 First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT Art Unit 1753 (Use as many sheets as necessary) Examiner Name Alan D. Diamond Sheet Attorney Docket Number 22122878-6

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initiats	Cite No.1	knowde name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, seriel, symposium, catalog, etc.), date, page(s), volume-issue number(s), muhiisher, city and/or country where published	
	87	WILKE, Steffen, et al.; "Theoretical investigation of water formation on Rh and Pt Surfaces"; J. Chem. Phys., 112, (2000) PP 9986 - 9995	Ī
	88	WINITERLIN, J, et al; "AtomicReaction Rates Surface-Catalyzed"; Science, 278, (1997) pp. 1931 - 1934	1
	89	WINITERLIN, J, R., et al.; "Existence of a "Hot" Atom Mechanism for the Dissociation of O2 on Pt(111)"; Phys. Rev. Lett., 77, (1996), pp 123 - 126	f
	90	ZAMBELLI, T., et al.; "Complex pathways in dissociative adsorption of oxygen on platinum"; Nature 390, pp 495 - 497 (1997)	ľ
	91	ZHDANOV, V.P., et al.; "Substrate-mediated photoinduced chemical reactions on ultrathin metal films"; Surf. Sci., V. 432 (#3) pp L599-L603, (1999)	
	92	ZHDANOV, Vladimir P.; "Nm-sized metal particles on a semiconductor surface, Schottky"; Surf. Sci. PROOF SUSC 2931, 20 April 2002	İ
	93	ZHUKOV, V. P., et al.; "Lifetimes of quasiparticle excitations in 4d transition metals"; Phys. Rev. B (2002) 65, Article 115116	-
			-
	_		L

Examiner	· ·	Date	
Signature			
COMMISSION	والمراجع المراجع	Considered	
EVALUADOS. 4-44-1	AP P		

AMINET: Initial If reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. .1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hotz Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments in the amount of time you are required to complete this form should be sent to the Chief information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0851-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

#### Complete if Known Substitute for form 1449/PTO **Application Number** 09/682,363 Filing Date INFORMATION DISCLOSURE 8/24/2001 First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT Art Unit 1753 (Use as many sheets as necessary) Examiner Name Alan D. Diamond Attorney Docket Number 22122878-6

	_	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials	Cite No.1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the kern (book, magazine, journal, sorial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
		DANIEL J. AUERBACH, Hitting the Surface Softly, www.sciencemag.org, Vol 294 Science, December 21, 2001, pp. 2488-2489.	T
	2	M.D CUMMINGS AND A.Y ELE ZZABI, Ultarfast impulsive excitation of coherent longitudal acoustic phonon oscillations in highly photoexcited InSb, 2001 American Institute of Physics, Volume 79, Number 6, August 6, 2001.	
	3	J.W. GADZUK, Resonance-Assisted Hot Electron Femotochemistry at Surfaces, National Institute of Standards and Technology, Gathersburg, Maryland 20899, Physical Review Letters, Volume 76, Number 22, May 27, 1996.	+
	4	BRIAN GERGEN, HERMAN NIENHAUS, W., HENRY WEINBERG, ERIC W. McFARLAND, Chemically Induced Electronic Excitations at Metal Surfaces, www.sciencemag.org, Vol 294, December 21, 2001, Pgs 2521-2523.	
·	5	H.HOU, Y.HUANG, S.J. GUILDING, C.T RETTNER, D.J. AUERBACH, A.M. WOODTKE, Enhanced Reactivity of Highly Vibrationally Excited Molecules on Metal Surfaces, www.sciencemag.org, Vol 284, June 4, 1999, pgs. 1647-1650	
	6	Y.HUANG,C.T RETTNER, D.J. AUERBACH, A.M. WOODTKE, Vibrational Promotion of Electron Transfer, sciencemag.org, Vol 290, October 6, 2000, pgs.111-114.	
	7	STEVEN p. IEWIS, ANDREW M. RAPPE, Controlling adsobate vibrational lifetimes using superlattices, 2001 The American Physical Society, Physical Review B, Bolume 63, 085402.	
	8	HENRY WEINBERG, ERIC W. McFARLAND, A. MAJUNDAR, B. GERGEN, HERMAN NIENHAUS, W., H.S. BERGH, Electron-Hole Pair Creation at Af and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium, 1999 The American Physical Society, Physical Review Letters, Volume 82,	
	9	HENRY WEINBERG, ERIC W. McFARLAND, A. MAJUNDAR, B. GERGEN, HERMAN NIENHAUS, W., H.S BERGH, Direct detection of electron-hole pairs generated by vhemical reactions on metal surfaces, 2000 Elsevier Science B.V., Surface Science, pgs. 335-342.	
	10	XIAOFENG, FAN, GEHONG, CHRIS LABOUNTY, AND BOWERS, JOHN E., CROKE, EDWARD, AHN, CHANNING C., HUXTABLE, SCOTT, MAJUMDAR, ARUN, SHAKOURI, ALI; SiGec/Si superlattice microcoolers; Applied Phuscis Letters, Volume 78, Number 11, 12 March 2001, Pg: 1580-1582.	
	11	FRIEDMAN, L., SUN G., SOREF, R.A.; SiGec/Si THz laser based on transitions between inverted mass light-hole and heavy-hole subbnads; Applied Physics Lettersl, Volume 78, Number 4, 22 January 2001; Pg: 401-403.	

Examiner		
	Date	
Signature		
Olgitatal's	Considered	f

\*EXAMINER: Initial if reference considered, whether or not oltation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief information Officer, Patent and Trademark Office, Washington, DC 20231.

DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patenta, Washington, DC 20231.

<sup>&</sup>lt;sup>5</sup> Unique citat on designation number. <sup>2</sup> Applicant is to place a check mark here if English tanguage Translation is attached.

Approved for use through 07/31/2005. OMB 0551-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

#### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Co	mplete if Known	
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

Eximiner folt als	Cits No.1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), nublisher, city and/or country where published	т
	12	HARRISON, P., SOREF, R.A.; Population-inversion and gain estimates for semiconductor TASER.	
	13	HARRISON, P., SOREF, R.A.; Room temperature population inversion in SiGe TASER design.	ļ
	14	HOHLFELD, J., WELLERSHOFF, SS, J., GUDDE, U., CONRAD, V., JAHNKE, E., MATTIAS; Electron and lattice dynamics following optical excitation of metals; Chemical	-
		Physics 251(2000). Pg: 237-258.	-
	15	HOU, H., HUANG, Y., GOULDING, S.J., RETTER., C.T., AUERBACH, D.J., WODRKE, A.M.; Dierect multiquantum relaxation of highly vibrationally excited NO in collisions with O/Cu(111);	 
Bedat was said and	16	JONGMA, RIENK T., WODTKE, ALEC M.; Fast multiquantum vibrational relaxation of highly	ļ
		vibrationally excited O2; Journal of Chemical Physics; Volume 111, Number 24; 22 December 1999; Pgs. 10957-10963.	
	17	KAWAKAMI, R.K., ROTENBERG, E., CHOI, HYUK J., ESCORCIA-APARICIO, ERNESTO J., BOWEN, M.O., WOLFE, J.H., ARENHOLZ, E., ZHANG, Z.D., SMITH, N.V., QIU, Z.Q.,	
		Quantum-well states in copper thin films; Letters to nature; Volume 398; 11 March 1999; www.nature.com.	
	18	MD. GOLAM MOULA, SURGIO WAKO, GENGYU CAO, IVAN KOBAL, YUICHI OHNO, TATSUO MATSUSHIMA; Velocity distribution of desorbin CO2 in CO oxidation ion Pd(110) under steady-state conditions; applied surface science; 169-170 (2001); Pgs: 268-272.	
	(	JEAN-PHILIPPE MULET, KARL JOULAIN, REMI CARMINATI, AND JEAN- JACQUES GREFFET; Nanoscale radiative heat transfer between a small particle and a plane surface; Applied Physics Letters; Volume 78, Number 19; 7 May 2001; Pgs: 2931-2933.	<del></del> -

Examiner	Date
Signature	
Sid latine I	Considered

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>†</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden How Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, War-hington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Unjer the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. Substitute for form 1449/PTO

**INFORMATION DISCLOSURE** STATEMENT BY APPLICANT

Co	mplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Altorney Docket Number	22122878-6

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the litem (book, magazins, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where nuthlished	F
·····	20	H. NIEHAOUS et al., " Direct detetion of electron-hole pairs generated by chemical reaction on metal surfaces", Surface Science 445 (2000), Pages 3350342.	
	21	H. NIEHAUS et al., "Selective H atom sensores using ultrathin Ag/Si Schottky diodes", Applied Physics Letters, Volume 74, Number 26, 28 June 1999, Pages 4046-4048.	
	22	J.J PAGGEL et al., "Quantum-Well States as a Fabry-Perot Modes in a Thin-Film Electron Interferometer", www.Sciencemag.org Science Vol 284 12 March 1999, Pages 1709-1711.	-
	23	J.J PAGGEL et al., * Quasiparticle Lifetime in Macroscopically Uniform Ag/Fe(100) Quantum	1
		Wells", Physical Review Letters, Volume 81, Number 25, 21 December 1998, Pages 5632-5635.	T
	24	J.J PAGGEL et al., " Quantum well photoemission from atomically uniform Ag films: determination of electronic band structure and quasi particle lifetime in Ag(100), Aplied Surface	
	ļ	Science 162-163(2000), Pages 78-85.	
	25	N.PONTIUS et al.," Size-dependent hot-electron dynamics in small Pdn-cluster", Journal of Chemical Physics, Violume 115, Number 22, 8 December 2001, Pages 10479-10483.	-
	26	R.A SOREL et al., "Terahertz gain in a SiGe/Si quantum staircase utilizing the heavy-hole inverted effective mass, Applied Phusics Letters, Volume 79, Number 22, 26 November 2001, Pages	<u> </u>
		3639-3641.	
	_		
1	1		

	•
Examiner	
	Date
Signature	1 24.0
Signature	Considered
	LCGnsideredi

<sup>\*</sup>EXAMINEF: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Sheat

Approved for use through 07/31/2008. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Co	mplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-6

Examiner initials	Cite No. 1	OTHER PRIOR ART - NON PATENT LETERATURE DOCUMENTS  Include name of the author (in CAPITAL LETTERS), the article (when appropriate), tille of the  item (book, magazine, journal, serial, sympostum, catalog, etc.), date, page(s), volume-tssue  number(s), publisher, city and/or country whem published	Ţ
	27	G. SUN et al., "Phonon-pumped terahertz gain in n-type GaAs/AlGaAs Superlattices, Applied Physics Letters, Volume 78, Number 22, Pages 3520-3522.	
	28	V. P. ZHDANOV et al., "Substrate-mediated photoinduced chemical reactions on ultrathin metal films", Surface Sciene 432 (1999), Pages L599-L603.	
	29	H. PARK et al., "Nanomechanical oscillations in a single-C60 transistor", Letters to nature, Volume 407, September 7, 2000, www.nature.com, Pages 57-60.	Ť
	30	G. SUN et al., "Phonon Pumped SiGe/Si Interminiband Terahertz Laser", Pages 1-11.	T
	31	G. SUN et al., "Phonon-pumped terahertz gain in n-type GaAs/Al GaAs superlattices", Applied Physics Letters, Volume 78, Number 22, 28 May 2001, Pages 3520-3522.	
	32	K. SVENSSON et al., "Dipole Active Vibrational Motion in the Physisorption Well", Physical Review Letters, Volume 78, Number 10, 10 March 1997, Pages 2016-2019.	†
* 1- 41-	33	R. D. VALE et al., "The Way Things Move: Looking Under the Hood of Molecular Motor	-
		Proteins*, Science, Volume 288, 7 April 2000, www.sciencemag.org, Pages 88-95.	-
	34	W. XU et al., "Electrical generation of terahertz electromagnetic pulses by hot-electrons in quantum wells, Superlattices and Microstructures, Volume 22, November 1,1997, Pages 25-29.	
	35	G. SUN, R.A. Soref, J.B. KHURGIN; "Phonon Pumped SiGe/Si Interminiband Terahertz Laser"	
		·	-
	.		

Examiner	 Date	,
Slo jature	Considered	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments in the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

PTO/SB/08A (08-03)

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

Complete # Known Substitute for form 1449/PTO Complete If Known **Application Number** 09/682,363 INFORMATION DISCLOSURE Filing Date 8/24/2001 First Named Inventor STATEMENT BY APPLICANT Anthony C. Zuppero

Art Unit 1753 (Use as many sheets as necessary) Examiner Name Alan D. Diamond Attomey Docket Number 22122878-6

Ext miner Initials	Cite No.1	OTHER PRIOR ART — NON PATENT LITERATURE DOCUMENTS Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, sorial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	1
	36	P. ARMOUR et al., "Hot-electron transmission through metal-metal interfaces: a study of Au/Fe/Au trilayers in GaAs substrates", Applied Surface Science 123/124 (1998), Pages 412-417.	†
	37	C.D. BEZANT et al., "Intersubband relaxation lifetimes in p-GaAs/AlGaAs quantum wells below the LO-phonon energy measured in a free electron laser experiment", Vacuum Solutions	$\dagger$
		Online, Semicond. Sci. Technol. 14 No. 8 (August 1999) L25-L28, PII: S0268-1242(99)03669-X.	t
	38	L. BURGI et al., "Confinement of Surface State Electrons in Fabry-Perot Resonators", Physical	l
···· -		Review Letters, Volume 81, Number 24, 14 December 1998, Pages 5370-5373.	ŀ
	39	I. CAMPILLO et al., "Inelastic lifetimes of hot electrons in real metals", Physical Review Letters, Volume 83, Number 11, September 13, 1999, Pages 2230-2233.	-
······	40	CHIANG, TC., "Photoemission studies of quantum well states in thin films", Surface Science Reports 39	
		(2000) pp 181-235	
V	41	DE PAULA, A. et al, "Carrier capture processes in semiconductor superlattices due to emission of confined phonons", J. Appl. Phys. 77 (12), 1995 pp 6306-6312.	
1980 Service 1880 1 1860 Sept 1880 Sept 1880	_		

Examiner	<b>****</b> ********************************
	Date
l Sinnatine i	
	Considered
(AMINER: Inhia) if information in	3 STIGISCIONI

reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English tanguage Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents,

Sneet

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Uniter the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it com-Substitute for form 1449/PTO

## **INFORMATION DISCLOSURE** STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Co	emplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878 6

Examiner initials*	Cite No. <sup>1</sup>	Document Number	Publication Date		Pages Columns May 199
	L . J	Number-Kind Code <sup>2 (7 Incom)</sup>	MM-DD-YYYY	Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant
	A	US-4045359 -	08-1977	Fletcher et al.	Figures Appear
	_ В	US-4407705	10-1983	Garscadden et al.	
	- c	US-5932885	08-1999	DeBellis et al.	
	D	US-6114620	09-2000	Zuppero et al.	
	_ E	US-6218608-B1	04-2001	Zuppero et al.	<del>                                     </del>
	F_F	L/S-6222116-B1	04-2001	Zuppero et al.	
	G	LS-6268560-B1	07-2001	Zuppero et al.	
	_ H	US-2001/0018923-A1	09-2001	Zuppero et al.	
		US-6327859-B1	12-2001	Zuppero et al.	
		US-2002/0017827-A1	02-2002	Zuppero et al.	
	к	US-2002/0121088-A1	09-2002	Zuppero et al.	
	╌┖╢	US-2002/0196825-A1	12-2002	Zuppero et al.	
	$\neg \uparrow$				
		:::''			
	1.				

Examiner Initials*	Cite No.1	Foreign Patent Document FOREIG	Publication	MENTS		
	140.	Cour try Code <sup>3</sup> Number <sup>4</sup> "Kind Code <sup>8</sup> (# known)	Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	7
	_		ļ			-
			<del> </del>			
						<b> </b> -
		·				Γ

			1	
Examiner			- <del></del>	
Signature		Date		_
EXAMINER.	Initial if reference and its little in the second s	Considered	•	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. Applicant's unique citation designation number (optional). See Kinds Codes of USPTO Patent Documents at <a href="https://www.uspto.gov">www.uspto.gov</a> or MPEP 901.04. See Finds Codes of Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. Applicant is to place a check mark here if English language

Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Conflictentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments and Trademark Office, P.C. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND

17. \*\*TOTAL PROPERTY OF THE PROPERTY OF

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Uncle	er the Paperwork Reduction Act of 1995, no persons are required	to respond to a collection of informa-	mark Office; U.S. DEPARTMENT OF COMMERCE
	estitute for form 1449/PTO	Co	mplete if Known
		Application Number	09/682,363
IN	FORMATION DISCLOSURE	Filing Date	8/24/2001
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		First Named Inventor	Anthony C. Zuppero
13	(Use as many sheets as necessary)	Art Unit	1753
	(Ose as many sneets as necessary)	Examiner Name	Alan D. Diamond
Sheet	1 01	Afforney Docket Number	22422070 6

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	CRe No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T2
	8	"Electron-hole pair creation by reactions at metal surfaces", downloaded from www.aps.org/meet/CENT99/BAPS/abs?S6980001.html American Physical Society Centernnial Meeting Program, Atalanta, GA, 20-26 March 1999	T
	9	"Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium", Physical Review Letters, Volume 82, Number 2. 11 January 1999	
	10	"The Solarex Guide to Solar Electricity" Solarex Corporation, Inc. Frederich, MD, pp. 66-67, April 1979	-
			-
			-
			_
			-
			_
	十		-
	+	· · · · · · · · · · · · · · · · · · ·	
xaminer	<u> </u>		

Examiner		Date	
Signature		Date	i
(		Considered	ĺ
PEVARABLED. 1-	N. A. I.		

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on Do Not send films you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231.

PAGE 44/64 \* RCVD AT 10/14/2004 5:46:18 PM [Eastern Daylight Time] \* SVR:USPTO-EFXRF-1/10 \* DNIS:8729306 \* CSID:2128913547 \* DURATION (mm-ss):34-42

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant,

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Co	omplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor Art Unit	Anthony C. Zuppero
Examiner Name	1753
Attorney Docket Number	Alan D. Diamond
Decket Multiper	22122878-6

	_	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	_
Examiner Initlals	Cite No.1	item (book, magazine, journal, serjal, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	1	REE, J. et al., "Dynamics of Gas-Surface Interactions: Reactio of Atomic Oxygen with Chemisorbed Hydrogen on TUNGSTEN,"	,
<del></del>		Journal of Physical Chemistry, Vol. 101 (#25), pp. 4523 - 4534, June 19, 1997.	
	2	REE, J. et al., "Reaction of atomic oxygen with adsorbed carbon monoxide on a platinum surface," Journal of Chemical	
		Physics, Vol. 104, Issue 2, pp. 742 - 757, January 8, 1996.	
	3	NOLAN, P.D. et al., "Molecularly chemisorbed intermediates to oxygen adsorption on Pt(111): A molecular beam and electron	-
		energy-loss spectroscopy study," Journal of Chemical Physics, Vol. 111, No. 8, pp. 3696 - 3704, August 22, 1999.	
	4	NOLAN, P. D. et al., "Translation Energy Selection of Molecular	L
	5	MURPHY, M. J. et al., "Inverted vibrational distributions from	
		molecular chemisorption well," Journal of Chemical Physics, Vol. 110, No. 14, pp. 6954 - 6962, April 8, 1999.	_
	6	KIM, M. S. et al., "Reaction of Gas-Phase Atomic Hydrogen with Chemisorbed Hydrogen Atoms on an Iron Surface," Bull. Korean Chem. Soc., Vol. 18, No. 9, pp. 985 - 994, May 22, 1997.	_
	1	BONN, M. et al., "Phonon-Versus Electron-Mediated Desorption and Oxidation of CO on Ru(0001)," Science, Vol. 285, pp. 1042 - 1045, August 13, 1999.	_

Examine			
Signature		Date	
-		Considered	
"EXAMINER: Inii	I I reference considered at a second		

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the Individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U. S. Patent and Trademark Office, Washington, DC 20231.

DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Oraw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup> Unique citati xi designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached,

Approved for use through 07/31/2006. OMB 0651 -0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Id to a collection of information unless it contains a wild OND.

Inder	the Paperwork Reduction Act of 1995, no persons are required	to respond to a collection of informa-	mark Office; U.S. DEPARTMENT OF COMMERC
Subs	titute for form 1449/PTO	Co	mplete if Known
		Application Number	09/682,363
IN	FORMATION DISCLOSURE	Filing Date	8/24/2001
	ATEMENT BY APPLICANT	First Named Inventor	Anthony C. Zuppero
Ο.	(Use as many sheets as necessary)	An Unit	1753
		Examiner Name	Alan D. Diamond
et_	of	Attorney Docket Number	22122878-6

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	72
<del></del> -	8	NOLAN, P. D. et al., "Direct verification of a high- translational-energy molecular precursor to oxygen dissociation on Pd(111)," Surface Science Letters, Vol. 419, pp. 1107	n
		L113, September 24, 1998.	
	9	DAVIS, J. E. et al., "Kinetics and dynamics of the dissociative chemisorption of oxygen on Ir(111)," Journal of Chem. Phys., Vol. 107(3), pp. 943 - 952, July 15, 1997.	e
	10	TRIPA, C. Emil et al., "Surface-aligned reaction of photo- generated oxygen atoms with carbon monoxide targets," Nature, Vol. 398, pp. 591 - 593, April 15, 1999, www.pature.com	-
	11	SHIN HK, "Vibrationally excited OD Radicals from the Reaction of Oxygen-Atoms with Chemisorbed Deuterium on TUNGSTEN,"	
		Journals of Physical Chemistry, Vol. 102(#13), pp. 2372 - 2380, March 26, 1998.	
	12	TRIPA, C. Emil et al., "Kinetics measurements of CO photo-oxidation on Pt(111)," Journal of Chemical Physics, Vol. 105,	-
		Issue 4, pp. 1691 - 1696, July 22, 1996.	
			•

4			
	Examiner		
		Date	
	Signature		
•		Considered	
	•		

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the Individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U. S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Sheet

PTC/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0851-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Co	mplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-6

U.S. Patent Document								
Daminer nitials*	Cite No.'	Number	Kind Code <sup>2</sup> (# known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant		
<u></u> إ	<u>-</u>	3,694,7		Burwell et al.	09/26/1972	Figures Appear		
						······································		
	1							
	T	•	1-1-		1			
					<del>- </del>			
						· · · · · · · · · · · · · · · · · · ·		
		<del></del>			<del></del>			
					<del></del>			
			<del>  </del> -					
			<del></del>		<del></del>			
			<del></del>					
			<del></del>					
			<del>-   -   -</del>		<del> </del>			
			<del>  -</del>					
			<del>  -</del>		f			
			<del></del>		-			
<del></del>			<del>  </del>	<del></del>				
<del> </del> -	<del></del>				<u> </u>			

		·		FORE	IGN PATENT DOCUMEN	TS		
Examiner	Cite		Foreign Petent Docu	ment		· · · · · · · · · · · · · · · · · · ·	Pages, Columns, Unes,	<del></del>
initiats*	No.	Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Where Relevant Passages or Relevant Figures Appear	7
		DT	1,230,509		Bleekrode et al.	12/15/1966	Abstract	T <sub>x</sub>
		<del>  -</del>						1-
		<del>├</del>						†
		┞┈┼╴			•			1
			: :					
		<del>  </del>		<del>  -</del>	<del> </del>	·		
							··	
					· · · · · · · · · · · · · · · · · · ·	<del> </del>		_
						<del></del>		<del> </del>

Evamison		
Examirer	Date	
Signature	Considered	
PVALME	- Chisidelen	

<sup>&</sup>lt;sup>1</sup> Unique citrition designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPC Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>/applicant is to place a check mark here if English tanguage Translation is attached.



Burden Hote Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINET: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw the through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

(Use as many sheets as necessary)

PTC/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031

Alan D. Diamond

U ster the Paperwork Reduction Act of 1995, no persons are required to	U.S. Patent and Trac o respond to a collection of Inform	demark Office; U.S. DEPARTMENT OF COMMERCI nation unless it contains a valid OMB control
3ubstitute for form 1449/PTO	C	omplete if Known
	Application Number	09/682.363
INFORMATION DISCLOSURE	Filing Date	8/24/2001
STATEMENT BY APPLICANT	First Named Inventor	Anthony C. Zuppero
OIAILMLNI DI APPLICANI	Art Linit	4750

Examiner Name

Sheet Attorney Docket Number 22122878-6 OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposhim, catalog, etc.), data, page(s), volume-issue number(s), publisher, city and/or country where published. Examine Initials\* No.1 3 TRIPA, C. E. et al., "Kinetics measurements of CO photo-oxidation on Pt(111)," J. Chem. Phys., Vol. 105, No. 4, 22 July 1996, pages 1691-1696, especially the disclosure beneath the paragraph header "C. Cross section determination methods" on page 1693. NOLAN, P. D. et al., "Molecularly chemisorbed intermediates to oxygen adsorption on Pt(111): A molecular beam and electron energy-loss spectroscopy study," J. Chem. Phys., Vol. 111, No. 8, 22 August 1999, pages 3696-3707, especially figure 9 and the descrption of figure 9 set forth on page 3702, 2nd full paragraph et seq. REE, J. et al., "Reaction of atomic oxygen with adsorbed carbon monoxide on a platinum surface," J. Chem. Phys., Vol. 104, No. 2, 08 January 1996, pages 742-757, particularly the abstract and page 753.

Examiner	
	Date
Signature	Considered
	Considered

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Weshington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not challon is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Under the Paperwork Reduction Act of 1995, no persons are required to Substitute for form 1449/PTO	U.S. Patent and Trade	PTO/SB/08A (08-03 proved for use through 07/31/2006. OMB 0651-003 emark Office; U.S. DEPARTMENT OF COMME
Substitute for form 1449/PTO		anon unless it contains a valid OMB control number.
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many shoets as necessary)	Application Number Fiting Date First Named Inventor Art Unit	09/682,363 8/24/2001 Anthony C. Zuppero
Sheel of	Exeminer Name Attorney Docket Number	Alan D. Diamond

<del></del>		He B-t-	1.5	U.S. PATENT DOC	<b>JMENTS</b>	
Examiner mittals*	Cite No.1	Number	Kind Code <sup>2</sup>	Name of Palentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Refevant Figures Appear
			<del> - </del>			- Association
	-		<del>    </del>	· · · · · · · · · · · · · · · · · · ·		
			<del></del>			
					<del> </del>	
			<del>  -</del>		- <del> </del>	
					<del> </del>	
	$\Box$				·	
					<del> </del>	
					<del></del>	
					<del> </del>	
					<del> </del>	
					<del> </del>	
					<del> </del>	
					<del> </del>	
					<del> </del>	
					<del> </del>	
					T	·
					<u> </u>	

<b>—</b>			Foreign Data and	FORE	IGN PATENT DOCUMEN	rs	<del></del>	
Examiner Initials	Cite No.of		Foreign Patent Docu Number <sup>4</sup>	Kind Code* (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant	T6
<del></del>		<del>-" -</del>	1,230,509		Bleekrode et al.	12-15-1966	Abstract	<del> </del> ×
		<del>-  </del> -			·			┿
								†-
				<del></del>		<del>  </del>		
						<del>  -</del>		<b> </b> _
			·			<del> </del>		┾–
<del></del>								╁╼
								├

Examiner		
Signature	Date	_
	Considered	
*EXAMINED: lotted to		

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231.

DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>8</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>9</sup> Applicant is to place a check mark here if English language Translation is attached.

Under the Paperwo		required to respond to a collection of information	PTO/SB/08A (08- proved for use through 07/31/2009. OMB 0651-01 smark Office; U.S. DEPARTMENT OF COMMER ation unless it contains a valid QMB control numb mplete if Known
		Application Number	09/682,363
NEORM	ATION DISCLOSUR	Filing Date	8/24/2001
	_	First Named Inventor	Anthony C. Zuppero
	IENT BY APPLICAN	Art Unit	1753
ezU)	as many sheets as necessary)	Examiner Name	Alan D. Diamond
Shept	of	Attorney Docket Number	22122878-6

Examiner Initials	Cite	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS Include name of the author (in CAPITAL LETTERS), title of the aiticle (when appropriate), title of the fitem (book, magazine, journat, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where multiple and statements.	T							
iriuais	No.1		72							
		DIESING, D. et al., "Aluminium oxide tunnel junctions: influence of preparation technique, sample geometry and oxide thickness," Thin Solid Films 342 (1999), pages 282-290, received 26 February 1998; accepted 11 September 1998.								
			╀─							
			$\vdash$							
,										
	İ		H							
		:								
			Г							
	1									
	-+		L							
i	- 1									
	+		_							
	$\neg$									
	-	· ·								
		·								
	$\dashv$									
			1							
.			ı							
xaminer	T		_							

<sup>&</sup>lt;sup>1</sup> Unique chation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.



Burden How Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Considered

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Under the Pa	perwork Reduction Act of 1995, no persons are require or form 1449/PTO	Id to respond to a collection of Information	PTO/SB/08A (08-03) proved for use through 07/31/2006. OMB 0651-0031 pmark Office; U.S. DEPARTMENT OF COMMERCE ation unless it contains a valid OMB control number. pmplete if Known
STAT	RMATION DISCLOSURE EMENT BY APPLICANT (Use as many sheets as necessary)	Application Number Filling Date First Named Inventor Art Unit	09/682,363 8/24/2001 Anthony C. Zuppero 1753
iheet	of	Examiner Name Attorney Docket Number	Alan D. Diamond 22122878-6

		II Q Dotom		U.S. PATENT DOC	UMENTS	
Examiner Initials	Cite No.1	Number	Kind Code <sup>2</sup> (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Unes, Where Relevant Passages or Refevent Figures Appear
		6,114,62	20	Zuppero et al.	09-05-2000	Figures Appear
		····				<del></del>
	~-				<del></del>	
					<del>                                     </del>	
					<del></del>	
					<del> </del>	<del></del>
					<del> </del>	
					<del> </del>	
					<del></del>	
					<del> </del>	
					<del> </del>	
					<del> </del>	
					<del> </del>	
					<del>+</del> -	
					<del> </del>	
					<del>                                     </del>	
					<del> </del>	
	,				<del> </del>	
					<del> </del>	
					<del> </del>	

				FORE	IGN PATENT DOCUMENT	rs		
Examiner Inklais*	Clba		Foreign Patent Document		Name of Patentee or	Date of Publication of	Pages, Columns, Lines,	_
	No 1	Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>3</sup> (# known)	Applicant of Cited Document	Cited Document MM-DD-YYYY	Where Relevant Passages or Relevant	T0
		WO	01/28677	A1	NeoKismet L.L.C.	04-26-2001	Figures Appear	┿
		wo	00/72384	Al	NeoKismet L.L.C.	11-30-2000		+
		NIL	1,065,463	$ \mid$ $ \mid$		13-1967		╁
		<del>                                     </del>						十
						<del></del>		L
								╄
		<del></del>						╂
						T		┼—

Examiner	<del></del>	
Signature	Date	
EVALUED.	Considered	

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of thre you are required to complete this form should be sent to the Chief information Officer, Patent and Trademark Office, Washington, DC 20231.

DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered, include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup> Unique diation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial possible. <sup>6</sup> Appli ant is to place a check mark here if English language Translation is attached.

Ut der the Paperwork Reduction Act of 1995, no persons are required to a Substitute for form 1449/PTO	Co	proved for use through 07/31/2006. OMB 0551-0031 emark Office; U.S. DEPARTMENT OF COMMERCE allon unless it conteins a valid OMB control num ber. empliste if Known
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	First Named Inventor Art Unit	09/682,363 8/24/2001 Anthony C. Zuppero 1753
Sheet of	Attorney Docket Number	Alan D. Diamond

22122010-0								
	OTHER PRIOR ART - NON PATENT I TO BE A STATE OF THE STATE							
C12-	Include name of the author (in CAPITAL LETTERS) IN							
No.1	publisher, city and/or county where well-the are pagets), volume-issue number(s),	T						
,	Nuclear Instruments & Mark and in Microsoft and catalytic activity of nano-scale Au islands supported on Tipos	$\dagger$						
	XP004057973, abstract.	╀						
6	P. AVOURIS et al., "Electron-Stimulated Catalysis Device", IBM Technical Disclosure Bulletin Vol. 26							
	170. 12, Way 1, 1983, pages 6378-6379, New York, US, XP002219954.							
		T						
		+						
+								
-								
		-						
$\top$		_						
+								
		<u> </u>						
$\perp$								
1								
	Date							
	5	Che body of the author (n CAPITAL LETTERS), file of the article (when appropriate), title of the file (book, magazine, journal, stories, symposium, catalog, etc.), date, page(e), volume-issue number(e), publisher, cly and/or country where published.  5 G.H. TAKAOKA of al., "Preparation and catalytic activity of nano-scale Au islands supported on Ti02", Nuclear instruments & Methods in Physics Research, Section - B: Beam Interactions with Materials and Atoms, North-Holland Publishing Company, Amsterdam, NL, Vol. 121, No.1, 1997, pages 503-506, XP004057973, abstract.  6 P. AVOURIS et al., "Electron-Stimulated Catalysis Device", IBM Technical Disclosure Bulletin, Vol. 25, No. 12, May 1, 1983, pages 6378-6379, New York, US, XP002219954.						

Examiner			
Signature		Date	
		Considered	
*EXAMINER: In	Hal H reference		

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will very depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT.SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Sheet

			Р	TO	)/SB/	ARN	mρ	001
pproved for	use	through	07/31/200	6	OMB	UCE VOCE	100	(60)

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

#### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known				
Application Number	09/682,363			
Filing Date	8/24/2001			
First Named Inventor	Anthony C. Zuppero			
Art Unit	1753			
Examiner Name	Alan D. Diamond			
Attorney Docket Number	22122878-6			

— <u> </u>		U.S. Palant	Document	U.S. PATENT DOC	UMENTS	
Examiner Initials	Cite No.1	Number	Kind Code <sup>2</sup>	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant
		5,651,83		Fraas et al.	MM-DD-YYYY 07-29-1997	Figures Appear
	2	5,932,88	5	DeBellis et al.	08-03-1999	
	3	4,753,57	9	Murphy		
	4	5,525,04	1	Deak	06-28-1988	
	5	5,299,42	2	Nakagawa et al.	06-11-1996 04-05-1994	
	6	5,317,87		Nakagawa et al.		
				Trakagawa et al.	06-07-1994	
					<del></del>	
	_					
	_					
			<del>-   </del>			
			<del></del>			
	_		<del>  </del>	·		

			FORE	IGN PATENT DOCUMENT	rs		
Cite	ļ	Foreign Patent Docu	ment				
No.1	Offices	Number <sup>4</sup>	Kind Code <sup>8</sup> (K known)	Name of Patentee or Applicant of Cited Document	Cited Document	Where Relevant Passages or Relevant	
_ <u> </u>	DT   _	1,230,509		Bleekrode		Figures Appear	<del></del> -
	<b>  </b>		11		12-13-1900	Abstract	12
					<del></del>		1_
							L
					<del> </del>		_
							L
							L
							$\Gamma$
					ļ		Г
							П
		A	No.1 Office3 Number4	Cite Foreign Patent Document No.1 Office3 Number4 (If known)	Cite Foreign Patent Document No.1 Offices Number4 Rind Codes (Windown) Name of Patentee or Applicant of Cited Document	No.1 Office3 Number4 Mnd Codes (Known) Name of Patentee or Applicant of Cited Document MM-DD-YYYY	Cite Foreign Patent Document  Name of Patentee or Applicant of Cited Document  Name of Patentee or Applicant of Cited Document  Name of Patentee or Applicant of Cited Document MM-DD-YYYY  Pages, Columns, Lines, Where Relevant Pagesges or Relevant Floures Appear

Examiner			<u> </u>
Signature		Date	
_		Considered	
EXAMINER: In	tial if reference considered whether		

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231.

DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

considered. In::luce copy of this form with next communication to applicant.

1 United the copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup> Unique citation designation number, <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>6</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 18 if possible. <sup>7</sup> Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08A (08-03)

Inder the Paperwork Reduction Act of 1995, no persons are required to r Substitute for form 1449/PTO	U.S. Patent and Trade	emark Office: U.S. DEPARTMENT OF COMMERCE
Substitute for form 1449/PTO	Со	emplete if Known
INFORMATION DISCUSSION	Application Number Filing Date	09/682,363
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	First Named Inventor	8/24/2001 Anthony C. Zuppero
(Use as many shoots as necessary)	Art Unit Examiner Name	1753
inget of	Attorney Docket Number	Alan D. Diamond 22122878-6

Examiner	Cite	OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS					
hilials"	No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	7				
		"Electron-hole pair creation by reactions at metal surfaces", downloaded from www.aps.org/meet/CENT99/BAPS/abs7S6980001.html American Physical Society Centernnial Meeting Program, Atalanta, GA, 20-26 March 1999					
,	9	"Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium", Physical Review Letters, Volume 82, Number 2. 11 January 1999	$\dagger$				
	10	"The Solarex Guide to Solar Electricity" Solarex Corporation, Inc. Frederich, MD, pp. 66-67, April 1979	+				
			+				
			-				
			+				
			-				
			-				
			_				
		,	_				
miner		Date					

Considered \*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SENC FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Steet

PTO/SB/08A (08-03)

ver me Paperwork Reduction Act of 1995, no nersons are mariles as	U.S. Patent and Trademark Office III Ough 0//31/2006. OMB 0651-00
politicing are required to	U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCO respond to a collection of information unless it contains a valid OMB control number  Complete if Known
ubstitute for form 1449/PTO	the state of the s
· · · ·	Complete if Known
	Application

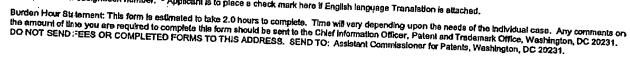
# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Co	emplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor	Anthony C. Zuppero
Art Unit Examiner Name	1753
	Alan D. Diamond
Attorney Docket Number	22122878-6

Cite	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, calabo, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	7,
I.	FRESB, et al., "Analysis of Current/Voltage Curves at n-Si/SiO_Pt Electrodes", J. Electrochem. Soc., December 1994, pp. 3375-3382, Vol. 141, No. 12, The Electrochemical Society, Inc.	+
2.	FRESE, et al., "Methanol Oxidation at p-Si/Pt Electrodes, Evidence for Hot Hole Reactivity", J. Phys. Chem., 1995, pp. 6074-6083, Vol. 99, American Chemical Society.	+
3.	GADZUK, "Multiple Electron Processes in Hot-Electron Perntochemistry at Surfaces", http://www.cstl.nist.gov/div837/837.03/highlite/gadzuk1999.htm.	+
4.	FRESE, et al. "Hot Riectron Pedinsion of The	+
5.	GAILLARD, et al., "Hot Electron Generation in Aqueous Solution at Oxide-Covered Tantalum Electrodes	-
6.	SUNG, et al., "Demonstration of Electrochemical Generation of Solution-Phase Hot Electrons at	_
7.	ZHDANOV, et al., "Substrate-mediated photoinduced chemical reactions on ultrathin metal films", Surface Science, 1999, pp. L599-L603, Vol. 432, Elsevier Science B.V.	-
1		
$\top$		
+		
	3. 4. 5.	<ol> <li>FRESB, et al., "Analysis of Current/Voltage Curves at n-Si/SiQ/Pt Electrodes", J. Blectrochem. Soc., December 1994, pp. 3375-3382, Vol. 141, No. 12, The Electrochemical Society, Inc.</li> <li>FRESB, et al., "Methanol Oxidation at p-Si/Pt Electrodes, Bvidence for Hot Hole Reactivity", J. Phys. Chem., 1995, pp. 6074-6083, Vol. 99, American Chemical Society.</li> <li>GADZUK, "Multiple Electron Processes in Hot-Electron Femtochemistry at Surfaces", http://www.cstl.nist.gov/div837/837.03/highlite/gadzuk1999.htm.</li> <li>FRESB, et al., "Hot Electron Reduction at Etched n-Si/Pt Thin Film Electrodes", J. Blectrochem. Soc., September 1994, pp.2402-2409, Vol. 103, The Electrochemical Society Inc.</li> <li>GAILLARD, et al., "Hot Electron Generation in Aqueous Solution at Oxide-Covered Tantalum Electrodes, Reduction of Methylpyridinium and Electrogenerated Chemiluminescence of Ru(bpy), 14th, J. Phys. Chem., 1999, pp.667-674, Vol. 103, American Chemical Society.</li> <li>SUNG, et al., "Demonstration of Electrochemical Generation of Solution-Phase Hot Electrons at Oxide-Covered Tantalum Electrodes by Direct Electrogenerated Chemiluminescence", J. Phys. Chem., 1998, pp. 9797-9805, Vol. 102, American Chemical Society.</li> <li>ZHDANOV, et al., "Substrate medicated a lateral Society.</li> </ol>

Examiner			
Signature		Date	_
		Considered	- 1
"EXAMINER: Ir	illel if reference considered whether		 1

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.



<sup>\*</sup>EXAMINER: Ir itle! if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Shee:

PTO/SB/08A (08-03)

der the Paperwork Reduction Act of 1995, no persons are required to re	U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCA  spond to a collection of Information unless it contains a valid OMB control number  Company of the Control o
Substitute for form 1449/PTO	Complete if Known
	Application Number

### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

09/682,363 Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 Examiner Name Alan D. Diamond Attorney Docket Number 22122878-6

		r	U.S. PATE	NT DOCUMENTS	
Examiner Initials	Cite No. <sup>1</sup>	Document Number  Number- Kind Code* (if known	Publication Date MM-DD-YYYY	Name of Palentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant
	1_	us- 6,232,546	05-15-2001	DiMatteo et al.	Figures Appear
	2	US- 6,396,191	05/28/2002	Hagelstein et al.	
	_3_	us- 5,057,162	1071371991	Nelson	
	4	us- 5,593,509	01/14/1997	Zuppero et al.	
		us-			
		US-			
		US-		<u></u>	
		US-			
	[	U8-			
1		US-		·	
		US-	<del></del>		
		US-			
1		US-			
		US-		<u>_</u>	
I		US-			
I		US-	~~~~ <u>~</u> _		
[		US-			
[		US-			
[		U\$-			
		US-	<del></del>		

	 FOR	EIGN PATENT D	OCUMENTO	
Examiner Inklais	 Foreign Patent Document  County Code 3 - Number 4 - Kind Code 4 (ff Injourn)	Bublications	Name of Patentiee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

Examin∋r				=
CABBITIST				
Signature	•	Date		_
Cignatule		Dale	1	
	the state of the s	Considered		
ACM ALMANA				

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Commissioner for Patents, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at <a href="https://www.uspto.gog">www.uspto.gog</a> or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of documents the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6 Applicant is to place a check mark here if Burden Hour Statement. This form is astimated to take 2.0 hours to complete. The swill year depending upon the code of the initiative.

Signature<sup>\*</sup>

Approved for use through 07/31/2006. OMB 0851-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

INFORMATION DISCLOSURE

STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Application Number 09/682,363

Filing Date 8/24/2001

First Named Inventor Anthony C. Zuppero

Art Unit 1753

Examiner Name Alan D. Diamond

Attorney Docket Number 22122878-6

Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-Issue number(s), publisher, city and/or country where published.	_   7
1	n-Si/Pt thin film electrodes," Journal of the Electrochemical Society, Vol. 141, No. 9, September 1994, pp. 2402 - 2409.	
2	MAHAN, G. D. et al., "Multilayer thermionic refrigerator and generator," Journal of Applied Physics, Vol. 83, No. 9, 1 May 1998.	
3	STIPE, B. C. et al., "Atomistic studies of O2 dissociation on Pt(111) induced by photons, electrons, and by heating," J. of Chem. Phys., Vol. 107 (16), October 22, 1997, pp. 6443 - 6447.	1
4	TRIPA, C. E. et al., "Surface-aligned reaction of photogenerated oxygen atoms with carbon monoxide targets," Nature, Vol. 398, 15 April 1999, pp. 591 - 593.	
		1
		+
		1
		†
		$\dagger$
		·
	1 2 3	PRESE, K. W., Jr. et al., "Hot electron reduction at etched n-si/Pt thin film electrodes," Journal of the Electrochemical Society, Vol. 141, No. 9, September 1994, pp. 2402 - 2409.  MAHAN, G. D. et al., "Multilayer thermionic refrigerator and generator," Journal of Applied Physics, Vol. 83, No. 9, 1 May 1998.  STIPE, B. C. et al., "Atomistic studies of O2 dissociation on Pt(111) induced by photons, electrons, and by heating," J. of Chem. Phys., Vol. 107 (16), October 22, 1997, pp. 6443 - 6447.  TRIPA, C. E. et al., "Surface-aligned reaction of photogenerated oxygen atoms with carbon monoxide targets."

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Considered

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the ame unt of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0851-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

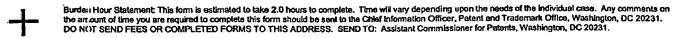
Su	bstitute for form 1449/PTO	Complete If Known		
0.0	334400 101 10111 17750 12	Application Number	09/682,363	
	NFORMATION DISCLOSURE	Filing Date	8/24/2001	
	+	First Named Inventor	Anthony C. Zuppero	
S	TATEMENT BY APPLICANT	Art Unit	1753	
	(Use as many sheets as necessary)	Examiner Name	Alan D. Diamond	
Sheet	10	Attorney Docket Number	22122878-6	

		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	
Exam ner Initials	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Τ2
	1	BONN, M. et al., "Phonon-Versus Electron-Mediated Desorption and Oxidation of CO on Ru(0001)," Science, Vol. 285, No. 5430, Issue of 13 August 1999, pp. 1042-1045.	
	2	DAVIS, J. E. et al., "Kinetics and dynamics of the dissociative chemisorption of oxygen on Ir(111)," J. Chem. Phys., 107 No. 3, 15 July 1997, pp. 943-951.	
	3	GADZUK, J. W., "Hot-electron femtochemistry at surfaces: on the role of multiple electron processes in desorption," Chemical Physics, Vol. 251, year 2000, pp. 87-97.	
	4	GADZUK, J. W., "Resonance-assisted hot electron femtochemistry at surfaces," Physical Review Letters, May 27, 1996, Vol. 76, Issue 22, pp. 4234-4237.	
	5	GE, NH. et al., "Femtosecond Dynamics of Electron Localization at Interfaces," Science, Vol. 279, No. 5348, Issue of 9 Jan 1998, pp. 202-205.	
	6	GAO, Shiwu, "Quantum kinetic theory of vibrational heating and bond breaking by hot electrons," Physical Review B, Vol. 55, No. 3, 15 Jan 1997-I, pp. 1876-1886.	
	7	HOU, H. et al., "Enhanced Reactivity of Highly Vibrationally Excited Molecules on Metal Surfaces," Science, Vol. 284, No. 5420, Issue of 4 Jun 1999, pp. 1647-1650.	
	8	NIENHAUS, H. et al., "Direct detection of electron hole pairs generated by chemical reactions on metal surfaces," Surface Science 445 (2000) pp. 335-342.	
	9	NIENHAUS, H. et al., "Selective H atom sensors using ultrathin Ag/Si Schottky diodes," Applied Physics Letters, June 28, 1999, Vol. 74, Issue 26, pp. 4046-4048.	
	10	GAILLARD, Frederic et al., "Hot electron generation in aqueous solution at oxide-covered tantalum electrodes. Reduction of methylpyridinium and electrogenerated chemiluminescence of Ru(bpy)32+," Journal of Physical Chemistry B., Vol. 103, No. 4, January 28 1999, pp. 667-74.	
	11	ENGSTROM, Ulrika and RYBERG, Roger, "Comparing the vibrational properties of low-energy modes of a molecular and an atomic adsorbate: CO and O on Pt (111)," Journal Of Chemical Physics, Vol. 112, No. 4, 22 January 2000, pp. 1959-1965.	

	,,,	
Examiner	Date	1
Signature	Considered	

<sup>\*</sup>EXAN INER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Unique citation designation number. 2 Applicant is to place a check mark here if English language Translation is attached.



Sheet

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of informations it contains a valid OMB control number.

Complete if Known Substitute for form 1449/PTO Application Number 09/682,363 Filing Date 8/24/2001 INFORMATION DISCLOSURE First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT 1753 Art Unit (Use as many sheets as necessary) **Examiner Name** Alan D. Diamond Attorney Docket Number 22122878-6

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the	72
Examilner nitlais*	Cite No.1	Item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
<del></del>	12	NOLAN, P. D. et al., "Molecularly chemisorbed intermediates to oxygen adsorption on Pt (111): A molecular beam and electron energy-loss spectroscopy study," Journal Of Chemical Physics,	
		Vol. 111, No. 8, 22 August 1999.	
	13	NOLAN P. D. et al., "Direct verification of a high- translational-energy molecular precursor to oxygen dissociation on Pd(111)," Surface Science Vol. 419,	
		pp. L107-L113, December 24, 1998.	
	14	OTTO, Andreas et al., "Role of atomic scale roughness in hot electron chemistry," Journal of Physical Chemistry B, Vol. 103, No. 14. April 8, 1999, pp. 2696-2701.	
	1.5	PLIHAL, M. et al., "Role of intra-adsorbate Coulomb correlations in energy transfer at metal surfaces," Physical Review B, Vol. 58, No. 4, July 15, 1998, pp. 2191-2206.	
	16	SUNG, Yung-Eun et al., "Enhancement of electrochemical hot electron injection into electrolyte solutions at oxide-covered tantalum electrodes by thin platinum films," Journal of	
		Physical Chemistry B., Vol. 102, No. 49, December 3 1998, pp. 9806-11.	
	17	ZHDANOV, V. P. et al., "Substrate-mediated photoinduced chemical reactions on ultrathin metal films," Surface Science, Vol. 432 (#3), pp. L599-L603, July 20, 1999.	
	18	NIENHAUS, H., "Electron-hole pair creation by reactions at metal surfaces," American Physical Society, Centennial Meeting	
	19	NIENHAUS, H et al., "Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium," Physical Review Letters, Vol. 82, Issue 2, January 11, 1999, pp. 446-449.	

		1	
Examiner		Date	
Signature	,	Considered	
Cigitatare			<del></del>

<sup>\*</sup>EXVMINER: Initial II reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.



Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the Individual case. Any comments on the information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0651-0031

S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

	U.G. FBIGH GIIO III	acciner cinec,	0.0. DEI 78 TIMEITI	OL COMMEKE
Under the Paperwork Reduction Act of 1995, no persons are required	to respond to a collection of infor	rmation unless i	it contains a valid OM	B control number
CINCEL THE LABOR WORK TROUBLEST FLOR OF			4.44	

Substitute for form		Complete if Known		
Substitute for for	H 1443F IO	Application Number 09/682,363		
MEODN	ATION DISCLOSURE	Filing Date	8/24/2001	
	NATION DISCLOSURE	First Named Inventor	Anthony C. Zuppero	
STATEN	MENT BY APPLICANT	Art Unit	1753	
(Use	as many shoots as necessary)	Examiner Name	Alan D. Diamond	
Sheet	Of I	Attorney Docket Number	22122878-6	

Examilner Initia s	tia s' No.1 publisher, city and/or country where published.		
	1	DIESING, D. et al., "Aluminium oxide tunnel junctions: influence of preparation technique, sample geometry and oxide thickness," Thin Solid Films, 342 (1999), pages 282-290, received 26 February 1998; accepted 11 September 1998.	
•			
<del></del>			
,			
Examine Signatur		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Dr.	raw line through citation if not in conformance and no
consix ered. Include copy of this form with next communication to applicant.	

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0851-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
a collection of information unless it contains a valid OMB control number

Substitute for form 1449/PTO	Complete If Known		
5008time (a) (a)(i) 1443/F10	Application Number	09/682,363	
INFORMATION DISCLOSURE	Filing Date	8/24/2001	
INFORMATION DISCLOSURE	First Named Inventor	Anthony C. Zuppero	
STATEMENT BY APPLICANT	Art Unit	1753	
(Use as many sheets as necessary)	Examiner Name	Alan D. Diamond	
hriet of	Attorney Docket Number	22122878-6	

Examin * Cle Include name of the author (in CAPITAL LETTERS), tille of the article (when appropriate), tille of the item (hook, magazine, journal, serials, symposium, catalog, set), data, page(s), volume-issue number(s), publisher, city and/or country where published.  1 AGRANOVICH, V. M. et al., "New concept for organic LEDs: non-radiative electronic energy transfer from semiconductor quantum well to organic overlayer", Elsevier Science, Synthetic Metals, 2001, Vol. 116, pages 349-351.	
from semiconductor quantum well to organic overlayer", Elsevier Science, Synthetic Metals, 2001, Vol.	72
	+

			r i i i i i i i i i i i i i i i i i i i
Examiner		Date	1
Signature		Considered	
L Old litter	The state of the s		

<sup>1</sup> Unique citation designation number. 3 Applicant is to place a check mark here if English language Translation is attached.



Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the emount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Sheet

PTO/SB/08A (08.03)

Under the Paperwork Reduction Act of 1995, no persons are required to	A U.S. Patent and Tra respond to a collection of infor	pproved for use through 07/31/2006, OMB 0651-0031 idemark Office; U.S. DEPARTMENT OF COMMERCE mation unless it contains a vallet OMB content
Sub stitute for form 1449/PTO	Complete If Known	
	Application Number	09/682,363
INFORMATION DISCLOSURE	Filing Date	8/24/2001

# STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known		
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

Examiner	Cite	Document Number	Publication Date	T DOCUMENTS	
Initials*	Cite No.1	Number-Kind Code <sup>2 (f known)</sup>	MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	Α	US-6,537,829	03-2003	Zarling et al.	
	El	US-6,444,476	09-2002	Morgan, Christopher Grant	
	c	US-6,399,397	06-2002	Zarling et al.	
	'				
	E:	US-6,312,914	11-2001	Kardos et al.	-
<del></del> -					
<del></del>	G.	US-6,251,687	06-2001	Buechler et al.	<u> </u>
	н	US-6,238,931	05-2001	Buechler et al.	
	- 				
	ĸ	US-6,159,686	12-2000	Kardos et al.	
<u>.</u>					
	м	US-5,891,656	04-1999	Zarling et al.	
i		U\$-	1	· · · · · · · · · · · · · · · · · · ·	

		FORE	<b>IGN PATENT DOCU</b>	MENTS		
Examiner Cite Initials* No.1	Publication Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines,	$\Box$	
		Country Code <sup>3</sup> "Number <sup>4</sup> "Kind Code <sup>5</sup> (if known)	MM-DD-YYYY	Applicant of Cited Document	Where Relevant Passages Or Relevant Figures Appear	۳۰
	L					
	<u> </u>					L
			<del></del>			<u> </u>
				<del></del>		_

		·L	_
Examinor	Date		
Signature			
	Considered		

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at <a href="https://www.uspto.gov">www.uspto.gov</a> or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵Applicant is to place a check mark here if English language

Transation is eracined.
This collection of Information is required by 37 CFR 1.97 and 1.98. The Information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentially is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the Individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Officer, D.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND
TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-788-9199) and select option 2.

Sheet

\_of

PTO/SB/08A (08-03)

Approved for use through 07/31/2008. OMB 0651-0031 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. Complete if Known Substitute for form 1449/PTO Application Number 09/682,363 Filing Date 8/24/2001 INFORMATION DISCLOSURE First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT Art Unit 1753 (Use as many sheets as necessary) Examiner Name Alan D. Diamond

Attorney Docket Number | 22122878-6

U. S. PATENT DOCUMENTS Examiner Cite No.1 Document Number Publication Date Name of Patentee or Pages, Columns, Lines, Where Relevant Passages or Relevant MM-DD-YYYY Applicant of Cited Document Number-Kind Code<sup>2</sup> (\* Inomig Figures Appear US-2003/0207331 Α 11-2003 Wilson et al. 8 US-2003/0166307 09-2003 Zuppero et al. C US-2003/0100119 05-2003 Weinberg et al. D US-2003/0030067 02-2003 Chen, Wei E US-2003/0019517 01-2003 McFarland, Erick W. G US-2002/0121088 09-2002 Zuppero et al, US-2002/0070632 06-2002 Zuppero et al. US-2002/0045190 04-2002 Wilson et al. US-2002/0017827 02-2002 Zuppero et al. US-6,700,056 03-2004 Zuppero et al. И US-6,649,823 11-2003 Zuppero et al. US-

		FORE	IGN PATENT DOCU	MENTS		
Examiner Initials*	Cite No.1	Foreign Patent Document	Publication Date	Name of Patentee or	Pages, Columns, Lines,	$\Box$
		Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>8</sup> (# known)	MM-DD-YYYY	Applicant of Cited Document	Where Relevant Passages Or Relevant Figures Appear	T®
					· · · · · · · · · · · · · · · · · · ·	_
						<u> </u>
				······································		<u> </u>

Examiner		
Signature	Date	
Oignature	Considered	
*EVALIBLE D		

\*EXAMINER: hillal if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 'Applicant's unique citation designation number (optional). 'See Kinds Codes of USPTO Patent Documents at <a href="https://www.uspto.gov">www.uspto.gov</a> or MPEP 901.04. 'Senter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 'For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 'Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 'Applicant is to place a check mark here if English language

Translation is a tached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or rotain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete. Including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the Individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND

To: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Steet

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Inder the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

#### INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Co.	Complete if Known				
Application Number	09/682,363				
Filing Date	8/24/2001				
First Named Inventor	Anthony C. Zuppero				
Art Unit	1753				
Examiner Name	Alan D. Diamond				
Attorney Docket Number	22122878-6				

Examiner Initials*	Cite No.1	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant
		Number-Kind Code <sup>2 (# known)</sup>	Approant of Order Document	Figures Appear	
	Α	US-5,763,189	06-1998	Buechler et al.	
	В	US-5,736,410	04-1998	Zarling et al.	
	С	US-5,698,397	12-1997	Zarling et al.	
	D	US-5,674,698	10-1997	Zarling et al.	
<del></del>	ε	US-5,632,870	05-1997	Kucherov, Yan R.	
		US-	T		
*****	· ·	US-	1		<u> </u>
		US-			<del> </del>
		US-			<del>                                     </del>
		US-			
	<del></del>	us-	<del></del>		
-		US-	<del> </del>		
-		US-			
	-	US-			
		US-			
		US-	<del> </del>		<del> </del>
		US-	<del>                                     </del>		<u> </u>

		FORE	IGN PATENT DOCU	MENTS		
Examiner Initials*	Cite No.1	Foreign Patent Document  Country Code* "Number * "Kind Code* (# known)	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	<b>⊤</b> 8
			MM-DD-YYYY			
		WO 01/28677A1	04-2001	Zuppero et al.		
		JP-02157012A	06-1990 -			<u> </u>
						-

Examiner I	,	Date	
Clamatum			
Signature		Considered	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. Applicant's unique citation designation number (optional). See Kinds Codes of USPTO Patent Documents at <a href="https://www.uspto.gov">www.uspto.gov</a> or MPEP 901.04. Enter Office that Issued the document, by the two-letter code (WIPO Standard ST.3). For Japanese patient documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. Applicant is to place a check mark here if English language Translation is attached.

Translation is attached.
This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to pricess) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.